NETWORK WORLD
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StrataCom targets cheap, flexible ATM

BY MICHAEL CSENGER

San Jose, Calif.

True bandwidth-on-demand ATM services that squeeze maximum efficiency out of network capacity soon will be possible as StrataCom, Inc. next week announces support for Available Bit Rate (ABR) class of service.

COMNET PREVIEW

Although the ABR specification is still being finalized, StrataCom has implemented all of the current definitions on its BPX wide-area Asynchronous Transfer Mode switch used in carrier and private networks. The company will support the final standard through firmware upgrades, company officials said.

ABR promises to lower the cost of ATM services by greatly increasing bandwidth utilization. Today's Variable Bit Rate and Constant Bit Rate services must reserve bandwidth for every active circuit, even

See StrataCom, *page 49*

SNA-TCP/IP CONVERGENCE

CNT gateways ease network integration

BY MICHAEL COONEY

Minneapolis

The battlefield for control of the corporate backbone is getting crowded.

On Feb. 6, Computer Network Technology Corp. (CNT) will roll out Convergence Enterprise Access Nodes (CVE), a family of mainframe channel-attached gateways that support SNA switching and provide a powerful but less expensive way of integrating SNA and TCP/IP networks and applications.

"We want to provide users with a simplified way to access mission-critical applications while reducing the cost of their operations," said Frantz Corneille, CNT's director of marketing.

The CVE family includes the 6500,

See Gateways, *page 48*

What's new

- A mainframe channel-attached multivendor gateway.
- Support for any industry-standard TCP/IP clients.
- Support for Novell IPX clients.
- Ability to work with existing CNT ChannelLink channel extension products.
- A remote SNA feeder node capable of SNA switching.
- Capability to support NetView and SNMP management platforms.

NEWSPAPER $5.00

Oracle spins Web strategy

BY BARB COLE AND ADAM GAFFIN

Redwood Shores, Calif.

In a move that could propel more businesses onto the Internet, Oracle Corp. next month will roll out a software kit designed to transform Oracle7 databases into World-Wide Web servers.

The Oracle7 Web Server Option, according to sources within the firm, will let companies set up Web servers accessible to employees, customers and suppliers for applications such as on-line catalogs and order entry.

When combined with Oracle's SQLNet middleware, the new software also will let companies offer remote employees real-time access to Oracle production databases via the Web. This connectivity could supplement or even replace existing private network links.

The Web, a global network of information servers connected over the Internet via hyperlinks, is an increasingly popular platform for doing business electronically.

Oracle said the Oracle7 Web Server Option, paired with new data encryption software the company will offer as an add-on to SQLNet, will provide a bulletproof environment for such electronic commerce. Last week, Oracle announced that it is shipping Secure Network Services, which adds full datastream encryption and integrity checking to any Oracle, custom or third-party application that works with Oracle7.

Jay Batson, senior analyst for network strategy research at Forrester Research, Inc. in Cambridge, Mass., said Oracle's Web products could address a growing problem for companies seeking to set up shop on-line: the lack of easy-to-use tools to get information out of

See Oracle, *page 49*

Object-based mgmt. goes on trial

Will shipment of Encompass and Karat show what all the hype is about?

BY MICHAEL COONEY AND JIM DUFFY

All the claims about object-oriented network and systems management will soon be put to the test as SunSoft, Inc. ships its Encompass platform and IBM prepares to roll out components of its Karat lineup.

Management vendors have long extolled the virtues of object technology, but others are divided on exactly what the benefits are and who will realize them.

Some say object orientation is the foundation for distributing management tasks across the enterprise and scaling functionality from the workgroup to the enterprise level. Others downplay its importance by claiming that platform capability is independent of the underlying programming technique employed.

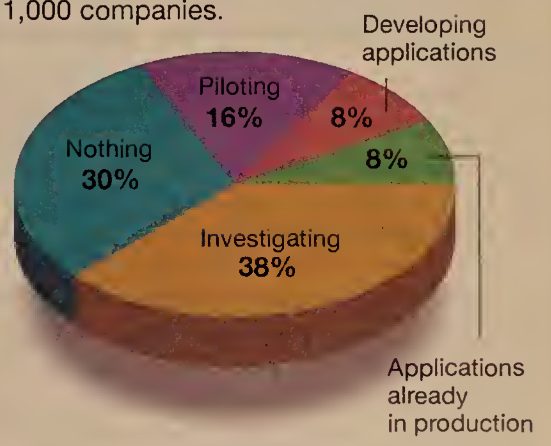
"Short-term, the real beneficiaries are going to be the [software] developers because it should make it easier for them to develop applications, reuse code and share code," said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo. "Hopefully, longer term, there might be some advantage for net-

See Trial, *page 50*

IBM makes a break from the past with new mgmt. plans. Page 31.

What are you doing with object technology?

Based on a survey of 50 Fortune 1,000 companies.



SOURCE: FORRESTER RESEARCH, CAMBRIDGE, MASS.

Users are split on apps partitioning

BY BARB COLE

Breaking up is hard to do. Just ask early adopters of application partitioning tools.

Corporate developers are struggling to get the most out of a flood of new software designed to let them split up application code on networked computers to make the best use of those resources and maximize performance.

NETWORK WORLD'S R.A.F. READER ADVOCACY FORCE

Developers are citing as problems with partitioning a lack of guidelines for how to best code the applications, limitations on how to repartition them and a shortage of resource monitoring tools. Without solutions to these problems, developers may risk bogging down network performance, endlessly rewriting code and escalating application maintenance costs.

"What we thought would take a day takes weeks, and we now have a full-time person devoted to this technology," said Steve Canali, manager of application development at Public Sector, Inc. in McLean, Va., which develops 911 public-safety systems.

Canali hoped to develop an application once and later move pieces of it to different operating systems and hardware platforms. He discovered, however, that significant programming was required to make code run on various platforms.

Users could benefit from some simple guidelines from vendors, such as which application logic is best stored on clients vs. servers, said Kasey Shuster, a project leader at New York Power Authority in White Plains, N.Y.

"Application partitioning tools are new and not well tested," said Shuster, whose company is par-

See Partitioning, *page 49*

NETWORK WORLD TEST alliance

Grand Junction and Intel lead the way to fast Ethernet in our testing of 100Base-T adapters. Page 35.

Briefs

Novell news. Novell, Inc. last week said its long-awaited UnixWare 2.0 software (*NW*, Nov. 7, 1994, page 1) started shipping in volume to customers. UnixWare will get more active backing from some longtime admirers Jan. 23 in San Francisco, as AT&T Global Information Solutions, Intel Corp., Unisys Corp. and others formally endorse the Novell software as their Unix flavor of choice.

Novell this week will announce a revamped support program that will include beefed-up technical support and training for resellers, as well as more extensive consulting and professional services for new products such as NetWare 4.1.

Video stars. Starlight Networks, Inc. this week will announce a video server that supports one-way, real-time live video feeds to desktop computers. The earlier version of Starlight's StarWorks video server only supported stored video feeds.

Separately, InSoft, Inc. this week will announce a Windows version of its Communique desktop videoconferencing system, which will work with its Unix-based desktop products. InSoft will also unveil an application program interface kit.

InSoft: (717) 730-9501; Starlight: (415) 967-2774.

Putting stock in the Internet. Paul Fingerman, director of systems architecture for the National Association of Securities Dealers Automated Quotations, last week said the 5,500 NASDAQ members have begun using a proprietary electronic mail package developed by the stock market to post buy-and-sell quotes.

The posted E-mail, carried over MCI Communications Corp.'s TCP/IP-based service, is designed to reach all NASDAQ members simultaneously.

DCE, see? IBM officials last week laid out plans to support the Open Software Foundation, Inc.'s Distributed Computing Environment (DCE) 1.1 technology into its MVS OS/400 and OS/2 operating systems.

The OS/2 version is in beta and should be released in the second half of this year.

This year also will see the first customer shipments of VM DCE-based services, which include remote procedure call time services as well as clients for security and directory services. IBM also expects to ship DCE DB2 for OS/2 and AIX in 1995.

IBM: (800) 426-2468.

Internews. Microsoft Corp. last week pushed further onto the Internet, announcing a deal with UUNet Technologies, Inc. of Falls Church, Va., to build a TCP/IP network that will link users of its planned Microsoft Network with the World-Wide Web and other Internet resources. As part of the deal, Microsoft took a small equity position in UUNet. Microsoft also said it will license Spyglass, Inc. Web browser software for use on the Microsoft Network and in other applications.

Networks weather West Coast storms. Flooding that ravaged areas of California last week drove people from their homes but was relatively kind to telecommunications networks. Pacific Telesis Group reported many local outages but only one major network break — a microwave repeater serving Ft. Bragg and Mendocino that went down for less than a day when commercial power was cut and the backup generator failed.

Similarly, GTE California reported scattered service disruptions but no major outages.

Comdisco, Inc.'s disaster recovery service received only three alerts from subscribers to its services in the affected storm area.

HP, Shiva ally. Hewlett-Packard Co. and remote access server vendor Shiva Corp. last week announced an agreement under which they will codevelop remote access modules for HP's AdvanceStack hubs. The products will provide dial-up network connectivity for remote sites, mobile professionals and telecommuters. The modules are due by midyear; pricing has not been set.

HP: (800) 752-0900; Shiva: (617) 270-8300.

For details on how to reach us, see page 51.

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Lotusphere

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Network HELP *desk*

Network World *tracks down answers to your questions regarding products, services, technologies or disputes with vendors. Please submit questions to Alison Conliffe via phone at (800) 622-1108, via fax at (508) 820-1103 or (508) 820-3467, via the Internet at aconliff@world.std.com or via CompuServe at 75471,2725.*

Our management has given me the task of identifying the necessary network training for our employees. During my search for training facilities, I have discovered a marked difference in cost between training centers certified by Novell, Inc. and uncertified centers.

What are the real differences between the Novell-certified training centers and the uncertified training centers, other than documentation and uncertified trainers? Do the differences justify the cost difference?

Also, is there network training in subjects other than Novell LANs that potential Certified NetWare Engineers (CNE) should seek?

Don Wamsley, Silver Spring, Md.

Kristin Marks, managing director of Networks Are Our Lives, a consultancy located in Red Hook, N.Y., advises:

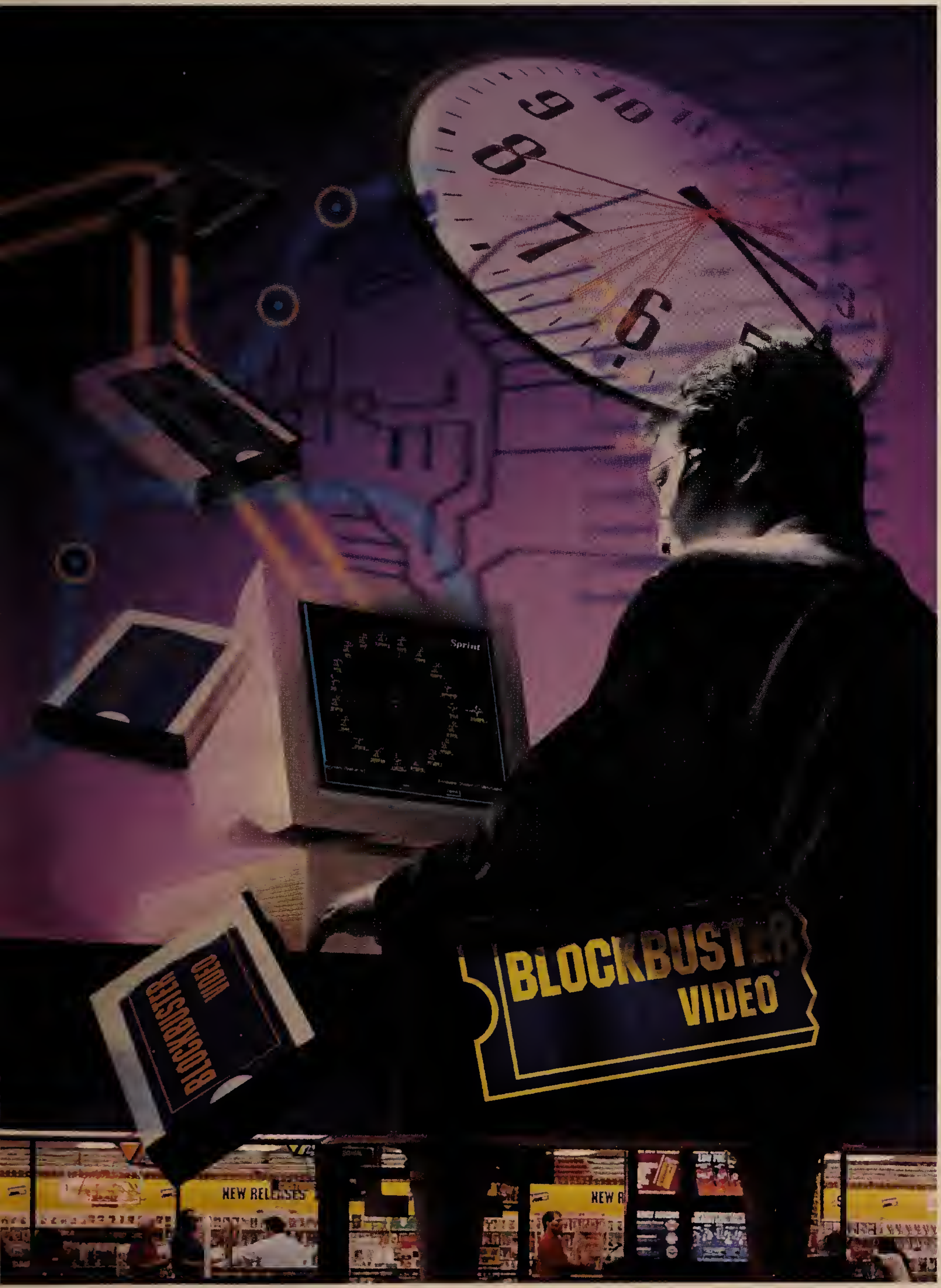
The difference in cost between training centers certified by Novell and uncertified centers is not always quality of training. What you purchase at a certified location is Novell's guarantee of a minimum standard for the quality of the room, the instructor's expertise and the use of Novell-authored courseware. It does not guarantee it will be good training, just not terrible.

You have to evaluate uncertified training companies on your own. They vary widely. Some fall below the minimum standard set by Novell, and some far exceed it. Also, some of the industry's most knowledgeable people teach for uncertified organizations. In either case, you should ask to speak directly with the instructors who will be teaching your employees so you can evaluate their expertise for yourself. Regarding course materials, ask uncertified companies for an evaluation copy or at least a table of contents.

You should examine your goals, as well. If you hope to educate several employees to become NetWare-savvy, certified training will provide you with the courseware required for passing the tests. You

See **Help desk**, *page 38*

24 time zones. 4,300 stores. 55,000 employees. 50 million customers. And one extraordinary company tracking it all.



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Business

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IBM does the corporate shuffle

BY MICHAEL COONEY

Armonk, N.Y.

IBM last week announced a management shakeup that resulted in the resignation of two top executives and a formal split of its Networking Systems division along hardware and software lines.

The moves are designed to put more emphasis on areas IBM considers most strategic — client/server technology and systems software. At the same time, however, they cost the firm two executives, Ellen Hancock and Robert LaBant, with 64 years of IBM experience between them.

"There had to be a better way of reorganizing the company and keeping the talent of Hancock and LaBant," said Dixon Doll, chairman and chief executive officer of the DMW Group consultancy in San Francisco. "IBM can't just run roughshod over talented people like that and not live to regret it."

In the short term, Hancock will be almost irreplaceable because she's so visible in the industry, said Howard Anderson, managing director of The Yankee Group consultancy in Boston. Plus, she had close ties to some of IBM's largest and most loyal customers.

Most users however, applauded the shake-up.

"[IBM Chairman Louis] Gerstner doesn't seem so much interested in keeping people on board, but in getting the company on track," said Sean Grant, senior coordinator of net operations at Discovery Communications in New York. "He seems to be willing to change plans if they don't work out."

"IBM is getting its act together," agreed Michael Godfrey, a visiting research professor at the Information Systems Lab at Stanford University's school of electrical engineering in Palo Alto, Calif.

Under a plan outlined in a memo from Gerstner dated Jan. 9, a new unified software group will include three divisions — Software Solutions, Personal Software Products and Networking Software. It will be headed by John Thompson, formerly in charge of operating systems development.

Nick Donofrio, who was head of the large-scale computing business, will lead a newly formed server group that includes the Application System/400 minicomputer line, RISC System/6000 workstations, and the Systems Technology and Architecture divisions, as well as mainframes. Networking Hardware will also fall under his domain.

Gerstner also named Ned Lautenbach as the new group executive responsible for IBM's worldwide sales and distribution, marking the first time its sales force has been headed by one person, analysts said.

Experts said the splitting up of Networking Systems reflects how it was run in the past year, not a shift in IBM's networking strategy. Networking Hardware and Software have been operating as essentially separate units with Don Haile leading software and B.J. Johnson leading hardware.

"If anything, the change will bring a higher profile to both groups," said Sam Albert, president of Sam Albert Associates in Scarsdale, N.Y.

That is the hope for software, where Gerstner is frustrated by the market perception that Microsoft Corp. is the largest software maker in the industry. At over $11 billion in sales, IBM's software business is almost double that of Microsoft's.

But market researchers say about $7 billion of that revenue comes from mainframe software. IBM needs to build its application base in the workstation arena where most of the future growth potential is.

On the server side, analysts said the formal formation of an all-encompassing server division under Donofrio is a signal IBM is going to make a corporate-wide thrust into the client/server arena.

"Gerstner deems the client/server world as a place he wants IBM to dominate," Albert said. "Now the tools are in place for a coordinated thrust."

➻ Senior Editor Peggy Watt contributed to this story.

IBM management shake-up

John Thompson, senior vice president. Former chief of operating systems development. Now will head unified software group that includes Software Solutions, Personal Software Products and Networking Software.

Nick Donofrio, senior vice president Former head of the large-scale computing division. Promoted to group executive, heading the server business. Now also has control of Networking Hardware.

Retired **Robert LaBant,** senior vice president, head of U.S. and Canadian marketing.

Retired **Ellen Hancock,** senior vice president, head of Networking Systems and Software Solutions divisions.

Silicon Valley gets hit by exec quake

It was a week for shuffling corporate leaders.

Besides the changes at IBM, Philippe Kahn stepped down from day-to-day operations of Borland International, Inc., and Sun Microsystems, Inc. President J. Philip Samper announced his resignation effective the end of next month.

Kahn resigned as chief executive officer and president of Scotts Valley, Calif.-based Borland but said he will remain chairman of the board. Replacing him as president is Gary Wetsel, 49, executive vice president of operations and chief technical officer. Wetsel is described by one analyst as "a numbers guy" who is well suited to help Borland's faltering finances. One of the first moves is likely to be the previously announced layoffs of nearly one-third of Borland's 1,750 employees.

Kahn has endured accusations that he improperly used company funds and misjudged product strategy.

But the final blow may have come several weeks ago with the resignation of Borland's No. 2 executive, Chief Operating Officer Keith Maib, who was hired just 10 months earlier as a turnaround specialist. Sources said Maib and Kahn were locked in a power struggle over how to return the weakened company to profitability. In its most recent earnings report last October, Borland said quarterly profits fell by 88% compared with a year earlier.

At Sun, Samper, 60, indicated he will leave after one year as Sun's president because he had accomplished his goals more quickly than he had expected. Samper, who resigned the Sun board last year after a longtime stint, will remain associated with the Mountain View, Calif., company as a part-time consultant.

Under Samper's leadership, Sun strengthened its corporate direct sales efforts and entered the personal computer server business, complementing rather than competing with its workstation servers.

BY BARB COLE AND
PEGGY WATT

Group plans to cram 64-bit features into 32-bit OSes

BY KEVIN FOGARTY

San Francisco

Unix and independent software vendors are drafting a plan that will give existing 32-bit Unix operating systems some of the abilities of 64-bit operating systems — those that will make networked multimedia and data warehousing applications run faster.

An informal group organized by SAS Institute, Inc. and the UnixWare Technology Group, an alliance of systems vendors, met Jan. 5 in San Francisco to hash out ways 32-bit operating systems can emulate some of the data access capabilities of 64-bit operating systems.

The group is developing an application program interface (API) that will let 32-bit operating systems access much larger files than they currently can. The 64on32 API will make it easier for data warehouses, multimedia applications and other software that has to access large data files operate with current versions of Unix, according to Carl Zeigler, manager of open systems research and development at SAS.

Having access to larger files will make resource-hungry network applications run faster and more reliably than they currently do, said Norton Greenfeld, president of Wayland, Mass.-based consultancy Implements, Inc.

"Just having an operating system that addresses big files helps overcome the 32-bitness of the OS," Greenfeld said. The move is a half-step toward full-blooded 64-bit operating systems, he said.

The API will be an extension to the spec for 32-bit operating systems, and will not change the number of bits an operating system or chip can process simultaneously. But it will change file addresses within the operating system to let the it see a larger address.

See Group, *page 50*

Sampling of summit attendees

- AT&T GIS
- Digital
- HP
- IBM
- Novell
- Oracle
- SunSoft
- Sybase
- Tandem

MCI's GE deal is carrier's largest contract to date

BY DAVID ROHDE

Fairfield, Conn.

MCI Communications Corp. last week signed what it claimed is its largest commercial contract ever, a seven-year agreement with General Electric Corp.

GE's contract is a warning shot across AT&T's bow, which counts GE among its crown jewel customers and is preparing for the expiration of GE's Tariff 12 deal next year, one of the carrier's original custom network arrangements.

Yet even the huge amount of the MCI deal — said to exceed the $250 million total of previous MCI deals with Citicorp and Bank of America — still does not displace AT&T as GE's principal carrier for wide-area data transport.

The deal does guarantee MCI at least 35% of GE's "telephone bill" by sometime next year, but that guarantee only includes voice services, according to a GE spokeswoman. And the contract includes considerable consolidation of existing MCI contracts with GE, confirmed Ed Harrington, the MCI national accounts manager who negotiated the deal with Stan Welland, GE's manager of corporate telecommunications.

"GE got an outstanding price on voice traffic," said a source close to the situation. "I would expect that they would keep most of the data with AT&T, but I don't think they want AT&T to know that because they're in negotiations with AT&T over their [Tariff 12] option."

The MCI deal includes a 50-node frame relay network for GE locations in the U.S. and Canada, keying off MCI's alliance with the Stentor group of Canadian provincial carriers. It also includes some international private-line business, with MCI claiming it is now the primary carrier for GE to Mexico and South America.

But AT&T remains GE's primary data network supplier and provider of videoconferencing services. And MCI does not gain an entry into GE's extensive European network, which is outsourced through AT&T, France Telecom and British Telecom.

Still, AT&T remains vulnerable to losing future domestic business because its Tariff 12 option for GE — valued at more than $80 million a year — is set to expire around the time in mid-1996 when the MCI deal is scheduled to bump up in usage, Harrington said. GE's Welland did not respond to repeated requests for comment.

An irritation in the negotiations to renew Tariff 12 has been a series of informal complaints to the Federal Communications Commission by a GE

See MCI, *page 10*

One company has finally overcome the four greatest obstacles to building a multi-protocol corporate-wide network.

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COMNET '95 PREVIEW

Micom adds WAN routing to subrate muxes

BY MICHAEL CSENGER

Simi Valley, Calif.

Micom Communications Corp. has added IP and IPX routing to its line of subrate data/voice multiplexers, giving users in the market for WAN routing a chance to slash their voice, fax and legacy data connectivity costs in the bargain.

Based on Micom's Marathon and NetRunner subrate multiplexers, which are optimized for 9.6K to 128K bit/sec leased lines, Micom's NetRunner Integration Routers (I-Routers) will be introduced at ComNet '95 in Washington, D.C. next week.

The I-Routers are standards-based and will work with traditional LAN routers and bridges from other vendors. Users can attach Ethernet LANs directly to the I-Routers or can be added as wide-area multiplexers on an installed LAN internetwork.

Previously, Micom supported only LAN bridging.

For simplified network installation and administration, Micom has developed a feature called Easy-Router Technology (ERT), which maps Layer 3 media access control addresses to the Layer 2 path. The I-Routers are therefore self-learning and will automatically update their routing tables as end-user moves, adds and changes occur.

ERT also spoofs and filters IP and IPX traffic to eliminate unnecessary WAN broadcasts. The technology can also route so-called unroutable protocols, such as IBM's Network Basic I/O Extended User Interface, according to Micom.

The I-Routers pit Micom against the likes of Cisco Systems, Inc. and 3Com Corp. at the low end of the router market.

"We're not going directly head-to-head and never will, but we'll be very happy with even a small part of the $2 billion router market," said Ken Guy, Micom's vice president of corporate strategy and business development.

Nick Patellis, a network specialist at EDS/Newtrend, Inc., an Orlando, Fla.-based provider of data services to financial institutions, has deployed six I-Router nodes — among dozens of existing Marathon and NetRunner nodes — and is now beta-testing Micom's new Service Advertisement Protocol and Routing Information Protocol filtration features.

Comparing I-Routers to Cisco's low-end routers that EDS/Newtrend also uses, Patellis said Micom has targeted its niche well. Mainstream router vendors may offer more options, but Micom has Ethernet compression and RS-232 support that even Cisco's products lack. Voice and fax savings are an added benefit, he said, and Micom's data handling capabilities can stand on their own.

According to Curtis Price, a research analyst at International Data Corp. in Framingham, Mass., "Micom realizes that the data/voice integration market is getting saturated and will start to slow down, so they need to develop a new long-term outlet."

The I-Router is available in five models, ranging in price from $2,450 to $12,000. They support from one to 18 WAN links, three to 141 LAN and legacy data ports, and four to 16 voice/fax ports. Existing Marathon and NetRunner users can upgrade to the IP/IPX routing capability, as well.

©Micom: (805) 583-8600.

Reality ✓ Check

Product: NetRunner Integration Router
Company: Micom

The benefits:

- Integrates IP and IPX routing with legacy data and voice multiplexing.
- Voice and fax charges are eliminated by carrying calls over low-speed sub-T-1 links, along with LAN and data traffic.
- Routing now provides fully meshed connectivity.
- Includes built-in configuration and administration capabilities.

The drawbacks:

- While Micom's voice compression is considered good, users should not expect toll-quality calls.
- Micom lacks experience in routing market.

The user view:

"Micom is new to this field and doesn't have all the bells and whistles of a Cisco. But Micom does have features that even Cisco does not, like hardware-based Ethernet compression."

Nick Patellis

BBN plots push to collaborative apps

BY ADAM GAFFIN

Cambridge, Mass.

Bolt Beranek and Newman, Inc., perhaps best known for its internetwork technology, hopes to carve out a new market as a vendor of object-oriented collaborative-computing software.

Over the next six to 12 months, BBN Software Corp., a division of BBN, plans an ambitious rollout of applications ranging from workflow and videoconferencing to group data analysis and Internet-based intelligent agents.

Collectively code-named Apogee, the new applications will work together across enterprise and public networks and give users real-time collaborative tools smart enough to improve their performance, said John Kish, president of BBN Software.

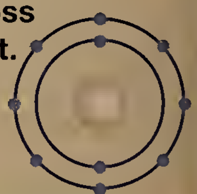
Key to Apogee is Microsoft Corp.'s Common Object Model (COM) and its Distributed OLE, Kish said. BBN will use COM objects as mini-storehouses of both data and programming code needed to manipulate that information.

These "atoms of work" will give users new ways to analyze and deal with information by easily linking atoms and letting the objects exchange information, Kish said.

Apogee also will let companies increase the efficiencies of business practices because the objects will be able to learn the way users deal with information on a regular basis.

Kish said BBN settled on COM because of the dominance of Windows on the desktop. Also underway is an effort to link COM with the Object Management Group's Common Object Request Broker Architecture for other platforms.

BBN Software is building its collaborative software around "atoms of work," objects that incorporate both information and programming code to manipulate that data. The objects can be readily distributed across a net.



One of the first Apogee applications will be a Windows data visualization tool called Cornerstone, due out next month, that will let users store the exact methods and database fields used to analyze data, and then share these templates with other users.

Initially, this sharing will be done via electronic mail or diskettes. But over the next year, Cornerstone will be enhanced to turn these templates into objects, which can then be stored in a repository for use over a network, Kish said.

Apogee also will build on applications BBN Software originally developed for the government, including automated workflow and desktop whiteboards.

Kish said the company is working with Illustra Information Technologies, Inc. of Oakland, Calif., and Oracle, Inc. to devise ways to integrate relational databases into the overall Apogee architecture by way of an object layer.

Kish said BBN will release intelligent agents or "infobots" that make it easier for two companies to exchange data by handling the search for required data across a public network. The firm will establish repositories on the Internet where these agents can drop off data and negotiate with agents from other firms.

John Rymer, a vice president at Patricia Seybold Group, Inc., a consultancy in Boston, said Apogee will let employees look at data in ways not possible with applications such as Lotus Notes.

©BBN Software: (617) 873-5000.

Army gets caught in software piracy firestorm

BY ELLEN MESSMER

Alamagordo, N.M.

White Sands Missile Range, a 3,000-sq.-mile top-secret U.S. Army site in the desert, is fighting off allegations that a bulletin board service it operated contained stolen software.

One firm, Louis E. Wheeler Co., last September reached an out-of-court settlement for an undisclosed sum after complaining its copyrighted Remote/Console software had been illegally posted on the White Sands-operated Simtel20 computer archive, for open access over the Internet.

White Sands officials say the Wheeler case was an isolated incident and that the Simtel20 bulletin board site — shut down in September 1993 — is part of a closed investigation into software piracy.

"This is a fabrication, and it's simply not true," said Army spokesman Larry Furrow.

But an 88-page document mailed anonymously to the media last week is setting off a bombshell of its own here at the isolated missle-testing range. The document purportedly describes how a group of computer engineers working for White Sands ran the Simtel20 computer as a stolen software site for almost a decade.

Of uncertain origin and date, the document claims to draw from investigations conducted by various Army and federal investigative units.

While the authenticity of the document could not be determined, numerous names, titles and other facts were confirmed.

For example, Elwood Baas last week acknowledged, as the report indicates, he was chief of the computer operations division of the Directorate of Information Management at White Sands Missile Range at the time the Simtel20 investigation took place.

Baas, now an engineer in the White Sands Instrumentation Development Directorate that develops radar systems, also admitted that pirated software did inadvertently end up on the Simtel20. "It was a repository," Baas said. "Thousands of people logged into the system."

But he denied the report's allegation that he was ringleader of software piracy ring.

"Criminally minded computer hackers, especially network hackers, have an air of arrogance about them that is matched nowhere else," the report said.

Baas also denied numerous other allegations of cronyism and fraud made about him in the document.

Army spokesman Larry Furrow acknowledged the document contains accurate information on people's names, rank and occupations, but disputes the contents.

"We're baffled," Furrow said. "The names are right in this, but it appears to us at White Sands that this is not put together like an official investigation document."

A Digital Equipment Corp. system running the TOPS operating system, the Army's Simtel20 computer, was purchased in 1981 for the purpose of running war-simulation programs. But Army officials acknowledge it ended up as an archive for mostly MS-DOS freeware and shareware that was freely accessed over the Internet.

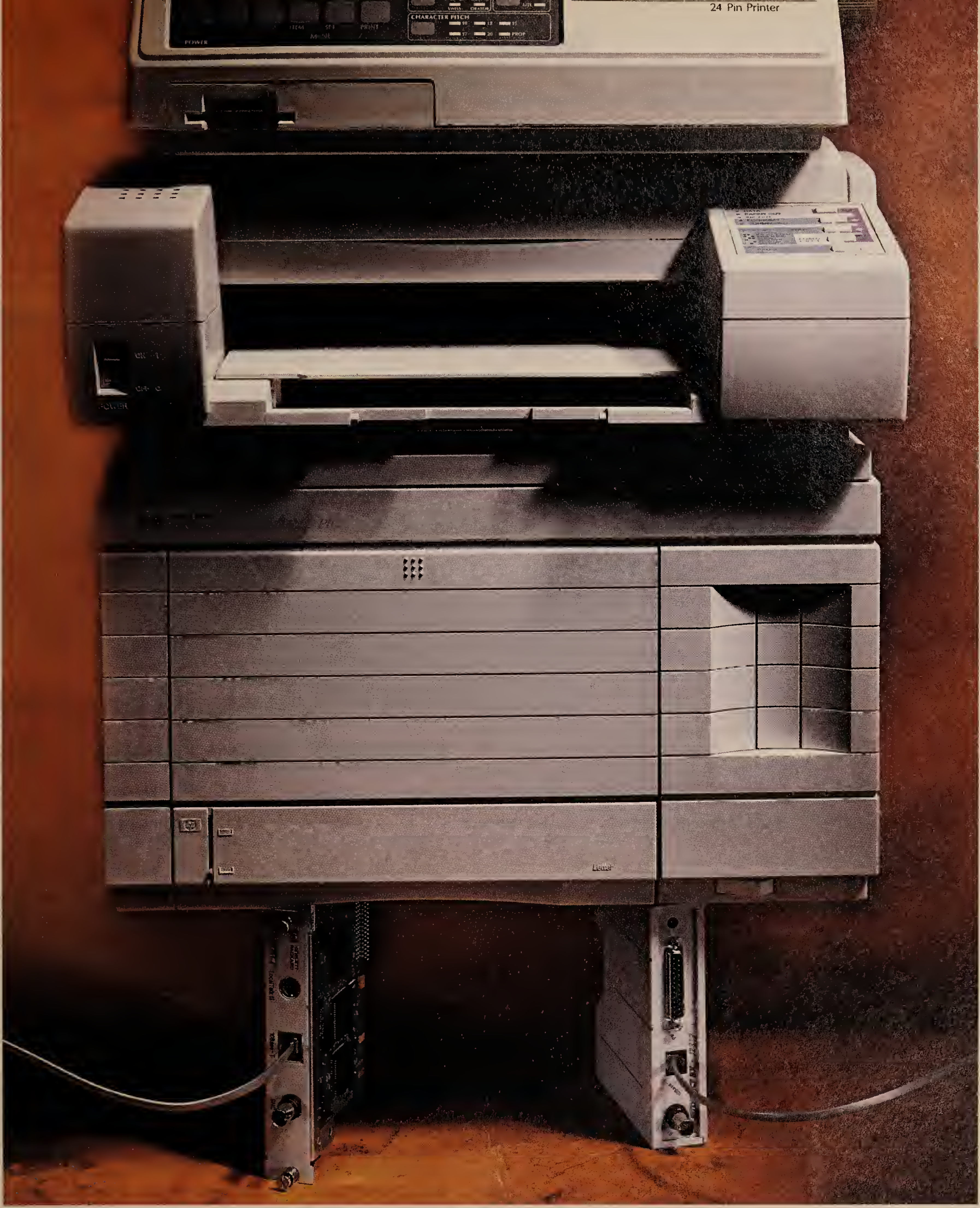
Louis Wheeler, head of the Oceana, Calif.-based firm that obtained a cash settlement with the Army, last week said he discovered other copyrighted software, including ProComm and Microsoft Corp.'s WINSdl3 Windows supplemental driver, during past searches of the Simtel20 database.

The investigation document also charges about a dozen civil service employees at the White Sands information directorate with fraudulent practices and also faults their commanders, military officers who allegedly failed to take action on complaints lodged against them.

But the report concludes that the best approach on the entire Simtel20 affair, estimated to leave the Army open to a possible $200 million worth of lawsuits, should be to bury the evidence. It states that the Simtel20 computer and its roughly 165,000 files were completely destroyed and the legal prosecution of individuals dropped.

Army officials acknowledge they conducted a criminal investigation into Simtel20 but deny they decided to forego prosecution to accomplish a cover-up.

"This is a fabrication, and it's simply not true," Furrow said.



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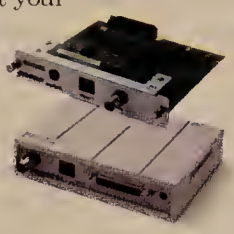

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MGMT. DECISIONS

Halliburton group turns to outsourcing

BY JOANIE WEXLER

Houston

Halliburton Energy Services last week said it has assembled an outsourcing team so it can pay by the pound for network services and other computing resources.

A $500 million, 10-year outsourcing commitment to I-NET, Inc., Andersen Consulting and Power Computing Co. is intended to more closely match Halliburton's operational costs with fluctuating network bandwidth and CPU requirements, said Cherie White, Halliburton's outsourcing project manager.

While she declined to specify a figure, White said the company is bullish that the move will radically slash operations costs in two to three years. The reason: A fickle corporate environment of mergers, acquisitions and sell-offs is causing Halliburton's resource requirements to ping-pong without the company being able to adjust fixed costs accordingly, she said.

For example, when Halliburton sold its geophysical division last year, it wound up with excess bandwidth on its 30-country private-line network and left-over cycles on its mainframe.

Halliburton's $3 billion energy division has merged nine companies into one business entity during the past two years, wreaking havoc with the division's fixed-cost structure.

As part of the solution, I-NET will basically buy Halliburton's global private-line network, tune it and sell services back to Halliburton, as well as to other energy companies.

Such resource sharing is becoming fashionable among companies that do not run networks as their core business. This was a key factor behind FoxMeyer Health Corp.'s recent decision to outsource its network operations to Hewlett-Packard Co. (see story, page 19).

About three-quarters of Halliburton's 266-person information technology staff has been redeployed in the three outsourcing partner companies. About 20 members of the original staff will stay on board.

Grand Junction speeds fiber-based fast E-net to mart

BY JODI COHEN

Fremont, Calif.

Grand Junction Networks, Inc. will help users extend the distance between nodes on 100Base-T networks when it announces here today a line of fiber-based fast Ethernet switches, hubs and adapter cards.

Fast Ethernet over fiber, a technology dubbed 100Base-FX, lets users take advantage of fiber-optic cabling's extended range, compared with that of unshielded twisted-pair (UTP) copper cabling.

However, Jean Young, product-line manager at Grand Junction, acknowledged that running fast Ethernet over fiber vs. UTP cabling has its trade-offs. The cost of running fast Ethernet over fiber is about twice that of running it over UTP.

Included in the FastLink suite is the FastSwitch 10/100 ES, a workgroup switch that gives users a choice of high-speed connections for server and backbone connectivity. It features two fast Ethernet ports, 25 dedicated 10M bit/sec Ethernet ports and two expansion slots for fiber or UTP FastMate modules.

The switches can be linked together via Grand Junction's new 12-port FastHub 100 hubs.

Rounding out the new product is the FastNIC 100 EISA adapter card, which gives Extended Industry Standard Architecture servers and workstations 100M bit/sec access to the company's hubs and switches.

Kurt Johnson, systems programmer for Minnesota Power & Light Co. in Duluth, has noticed improved network performance since he began beta-testing a pair of FastSwitch 10/100s and a FastHub 100. "[Minnesota Power] runs network backups in the morning, which used to really take the segment down to its knees, but now people don't even notice," he said.

Pricing for the FastSwitch 10/100 ES starts at $7,995, and the FastMate modules' pricing starts at $495. The FastHub 100 repeater costs $7,995, and the FastNIC 100 EISA adapters' price starts at $1,195. All products will be available by February.

✆ Grand Junction: (800) 747-3278.

THE BATTLE CONTINUES

Another week, another billion

Total high bids in the FCC's broadband PCS auction last week rose from just over $2 billion to a hair under $3 billion. Meanwhile, the Sprint-cable consortium known as WirelessCo strengthened its position by snatching a previously awarded broadband license (see story, page 19).

Shown are the high bidders for each of the two available 30-MHz blocks in each of the 10 largest markets offered by the FCC. Three markets - New York, Southern California and Washington, D.C.-Baltimore - each have only one block available due to earlier awards.

Round 33, Thursday, Jan. 12

Region	Bidder	Bid (in millions)
New York	Craig McCaw	$330.3
Southern California	Pacific Telesis	$330.0
Chicago	AT&T	$111.3
	GTE	$117.6
San Francisco Bay Area	WirelessCo	$123.4
	Pacific Telesis	$132.0
Detroit	WirelessCo	$61.0
	GTE	$58.4
North Carolina	AT&T	$54.6
	BellSouth	$58.4
Dallas-Fort Worth, Texas	WirelessCo	$50.5
	PCS Primeco	$45.8
Boston-Providence, R.I.	AT&T	$56.8
	Boston PCS Venture	$58.4
Philadelphia	AT&T	$66.9
	GTE	$63.6
Washington, D.C.-Baltimore	AT&T	$54.5

PCS Primeco = NYNEX, Bell Atlantic, US WEST and AirTouch Communications
WirelessCo = Sprint plus three CATV companies

Users to forge ahead with mobile apps, despite pitfalls

BY JOANIE WEXLER

San Jose, Calif.

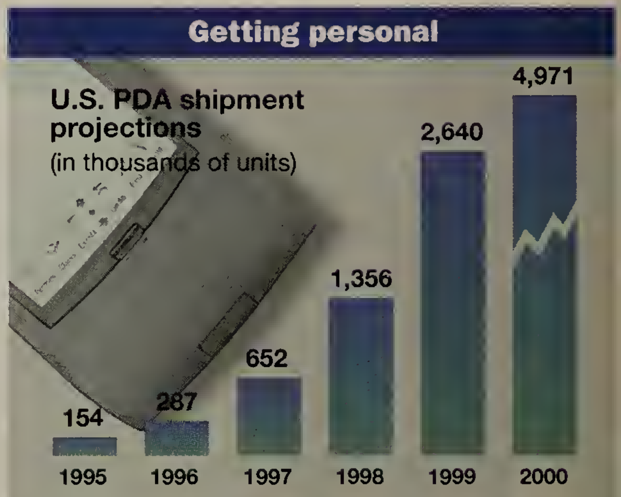
Several large organizations already banking on mobile applications last week congregated at the PDA Forum here to discuss their experiences with handheld communicators.

Among them were the Chicago Board of Trade (CBOT) and Monsanto Chemical Co., which described the ups and downs of their projects involving personal digital assistants (PDA).

To comply with new legislation mandating trading transaction audit trails, CBOT developed a spread spectrum-based system that allows traders to execute transactions via a homegrown pen-based PDA. The transactions are recorded and time-stamped by the exchange's host computer.

CBOT went through 250 hardware requests for proposal, three prototypes and $11.5 million before getting ergo-

See Mobile apps, *page 48*



PDAs will eventually overcome today's market inhibitors, such as hefty prices, fuzzy sales channels and weak communications links.

SOURCE: BIS STRATEGIC DECISIONS, NORWELL, MASS.
GRAPHIC BY SUSAN SLATER

Newbridge sheds proprietary network management skin

BY MICHAEL CSENGER

Herndon, Va.

Moving a step closer to truly unified network management, Newbridge Networks Corp. has developed a second-generation management platform that is standards-based and will interwork with such popular platforms as HP OpenView.

The Newbridge Management Executive is a family of interoperable software products that interwork with other management systems to administer LAN/WAN internetworks from a single platform. Newbridge has hooked its system into Hewlett-Packard Co.'s OpenView and is working with several others, which have not yet been announced.

Four new and enhanced products comprise the Management Executive family. The 46020 MainStreet Network Manager is a completely overhauled version of the current 4602 MainStreet Intelligent NetworkStation, now using the new Solaris 2 operating system and a new database engine for greater horsepower.

The 46020 manages wide-area Newbridge nets and can interwork with popular LAN management platforms such as OpenView. Using Newbridge's graphical user interface, users simply click on an icon representing a LAN and the 46020 will launch OpenView, running both on a Sun Microsystems Computer Corp. SPARC workstation.

Newbridge's own Asynchronous Transfer Mode LAN management platform, the Vivid System Manager, is also part of the family and will be the first to ship next month. Alarms and other administrative bells and whistles are shared among all three management platforms to allow monitoring and troubleshooting across the entire network.

PROPRIETARY NO MORE

"With their SNMP [Management Information Base] support and the OpenView arrangement, they've recognized that no one company can do the whole thing, and this big-picture view sounds good to me," said Frederick Dyer, associate director of the Georgia Center for Advanced Telecommunications Technology, based at Georgia Tech's Atlanta campus.

Dyer's group has been using the current 4602 management platform for its network of wide-area Newbridge equipment, including its ATM switches, but was unable to incorporate the rest of its multivendor LAN and campus environment.

Another part of the family is the 48020 MainStreet Service Director. It provides the attachment point for other management systems and also partitions logical views of the network.

Lastly, Newbridge provides an open door for third-party applications with its 49000 MainStreet Business Optimizer, which provides hooks for billing software or usage-tracking software, for example.

Starting with the Vivid System Manager at the end of February, Newbridge will roll out the complete Management Executive family by the fall. Pricing depends on network size but starts at $10,000 for the 46020. The Vivid System Manager likewise starts at $10,000.

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- ☐ Integrator
- ☐ Reseller
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- ☐ Community College
- ☐ University

Government:
- ☐ State
- ☐ Federal Military
- ☐ Federal Civilian

Commercial:
- ☐ All Commercial

Which of the following best describes your job function?
- ☐ Technical Staff
- ☐ Technical Management
- ☐ Other________

Do you have a networking project planned?
- ☐ Within 3 months
- ☐ 3-6 months
- ☐ 6-12 months
- ☐ 12 months +
- ☐ Nothing planned

What high-performance networking technology do you plan to use within the next 6 months?
- ☐ FDDI/CDDI
- ☐ ATM
- ☐ 100Mb Ethernet
- ☐ 100VG AnyLAN

How big is your workgroup network?
- ☐ 10-50 nodes
- ☐ 51-100 nodes
- ☐ 151-300 nodes
- ☐ 300-500 nodes
- ☐ 500-1000 nodes

What network protocols does your workgroup use/plan to use within the next 6 months?
- ☐ TCP/IP
- ☐ IPX
- ☐ AppleTalk
- ☐ DECnet
- ☐ Other

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Hughes, Dynatech unveil frame relay building blocks

Hughes backbone switch features up to 1,400 ports, while Dynatech DynaStar 100 routes IP, IPX to frame relay nets.

BY JIM DUFFY

Two vendors are attacking different ends of the frame relay equation with products that allow users to build and access a backbone network based on the fast-packet technology.

Hughes Network Systems, Inc. (HNS) this week will announce a backbone switch that supports as many as 1,400 frame relay ports. Meanwhile, Dynatech Communications, Inc. last week rolled out an integrated access device that combines frame relay access with LAN routing, terminal serving, and synchronous and asynchronous dial-up capabilities.

Fully configured, the HCN supports an aggregate throughput of 300M bit/sec and can handle more than 50,000 packet/sec.

The products will be showcased at the ComNet '95 show next week in Washington, D.C.

HNS' 9000 High Capacity Node (HCN) extends the company's 9000 series Strategy frame relay switches. The switch is targeted as a backbone device for private frame relay networks that takes traffic in from routers and other switches equipped with frame relay interfaces.

The HCN is housed in an 84-inch cabinet and can be configured with two to 15 chassis, each with dual 10M bit/sec buses. Each chassis sports 12 slots for eight-port modules equipped with channelized T-1/E-1 or Basic Rate Interface and Primary Rate Interface ISDN interfaces.

Fully configured, the HCN supports an aggregate throughput of 300M bit/sec and can handle more than 50,000 packet/sec, according to HNS literature obtained by *Network World.*

The device is fully redundant and features an access restriction checking capability.

The HCN will be available in April. Pricing could not be learned by press time.

DYNATECH DOINGS

Separately, Dynatech unveiled DynaStar 100, a device that attaches Ethernet LANs to frame relay and X.25 networks using T-1, ISDN, and synchronous and asynchronous circuits. DynaStar 100 routes IP and IPX traffic; bridges DECnet, Open Systems Interconnection and Xerox Network System protocols; and communicates with other routers using the Point-to-Point Protocol.

In a base configuration, DynaStar 100 includes one Ethernet, three synchronous ports, one asynchronous port, bridging and routing software, and one expansion slot. That slot can be used to handle additional Ethernet, ISDN, and synchronous or asynchronous WAN ports.

The price for a basic configuration is $2,895. DynaStar 100i includes one ISDN BRI, one additional WAN port, one Ethernet, bridging and routing software, and an expansion slot for $2,495. Both models are available now.

"You can go to other router products that are far more expensive. But I haven't seen one that's as reasonably priced with as many features as this box," said Dynatech user Peter Eisner, president of NewsCom, Inc. in Coral Gables, Fla. "The price is very attractive compared to some of the higher end routing that you see, and the functionality is there."

"It's the age old question of 'What does a user want: a refrigeroven or a single function device?' " said Jennifer Pigg, director of data communications research and planning at The Yankee Group in Boston. "The user that goes with a Dynatech-like solution is paying less money. What [the user is] gambling with is the fact that [he's] losing out on some of the enhanced features and functionality of the separate devices."

©HNS: (301) 428-4299; Dynatech: (703) 494-1400.

CORRECTION

There were two errors in the story and accompanying graphic (Jan. 9, page 13) about the 1995 Switched Technology Evaluation Series being conducted by Strategic Networks Consulting, Inc. and Scott Bradner. The number to call to learn the Web address for test results is (800) 999-7624. And tests of switched Ethernet with 100Base-T will be conducted during the second quarter.

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House Republicans plan telecom reform legislation

BY ELLEN MESSMER

Washington, D.C.

Flush with newfound power, Senate Republicans last week said they will introduce legislation by February aimed at massive deregulation of the telecommunications industry.

The Republicans indicated they support the idea of allowing the Bell operating companies into areas of business now closed to them, including provision of long-distance service and equipment manufacturing, all by 1998.

The bill might also emerge as a boon to electric utilities and broadcasters, allowing them to provide telecommunications services such as paging.

"We need deregulation," said Sen. Bob Dole (R-Kan.), who kicked off the Republican drive for telecommunications reform at the Senate Commerce Committee hearing last week chaired by Sen. Larry Pressler (R-S.D.). "The marketplace, not the government, should pick the winners and losers."

Although the big losers under the envisioned bill could be long-distance carriers such as AT&T, MCI Communications Corp. and Sprint Corp., the Republicans hope the Bell companies can be forced into working with the newfound competitors to give them local loop access. There's talk about having the Federal Communications Commission play the role of judge, meting out fines for lack of cooperation on local loop access.

Like the Democrat-sponsored bill that died last year due to Dole's move to block it, the Republican bill likely willsupercede state regulatory authority by mandating local market competition.

From top: Sen. Larry Pressler, Rep. Thomas Bliley and Sen. Bob Dole

At the Senate hearing, House Republican leaders Rep. Jack Fields (R-Texas), new chair of the House telecommunications subcommittee, and Rep. Thomas Bliley (R-Va.) now chair of the House Commerce Committee, pledged support for quick action on whatever bill emerges in the next few weeks.

Despite fervent faith in deregulation, the Republicans last week acknowledged the need to maintain the kind of FCC rules that require the Bells to provide universal service to rural areas and other unprofitable locations.

Sen. Bob Packwood (R-Ore.), new chair of the Senate communications subcommittee and a key player in crafting the new bill, said Republicans are setting a target date of July 4 for passage of telecommunications reform legislation.

But Packwood last week acknowledged that the Clinton administration already has voiced its unwillingness to accept any bill that gives companies with monopoly power in the local loop an unfair advantage.

MCI

Continued from page 4

subsidiary attempting to resell network capacity gained under Tariff 12 to small businesses. The subsidiary, GE Exchange, told the FCC that AT&T has been holding up such orders (*NW*, July 11, 1994, page 29), and sources said GE Exchange has been looking to other carriers to fit the bill.

In fact, GE's corporate users reportedly have put pressure on GE Exchange not to escalate the Tariff 12 resale issue into a formal complaint so as not to damage negotiations with AT&T over a Tariff 12 renewal in 1996.

But in what appears to be coincidental timing, the FCC earlier this month said it would probably fine AT&T $1 million to resolve a formal complaint that GE Exchange and two other resellers filed regarding an unrelated contract tariff. The resellers said AT&T failed to provision service to its customers. AT&T has 30 days to respond but issued a statement saying the resellers' charges are baseless.

An AT&T spokesman said the contract tariff dispute has no connection to the Tariff 12 negotiations: "The reseller issue is a very small part of a very large contract."

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ENTERPRISE INTERNETS

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Firms roll out new security measures

BY ELLEN MESSMER

Security Dynamics Technologies, Inc. and TimeStep Corp. are giving users new means for safeguarding data on corporate networks.

Security Dynamics this week will announce user authentication server software aimed at cutting down on password theft when remote users access Novell, Inc. 3.11 or 3.12 networks. The software grants server access based on a onetime, variable password generated every minute via a smart card the user carries called the SecureID.

For the separate problem of shielding sensitive corporate data, Ontario-based TimeStep has developed personal computer software that automatically encrypts all TCP/IP traffic based on the IP address.

Ameritech Corp., which has a large corporate LAN internet, this month will be among the first beta users of the Security Dynamics remote access control product called ACE/Client for NetWare, set to ship by April.

The variable-password system consists of the Unix-based ACE/Server that keeps the audit trail and works with the client software and the Novell bindery to perform each user authentication check.

"This is the first time a leading LAN operating system vendor has integrated Security Dynamics' enhanced security into its operating system," said Jay Batson, senior analyst with Forrester Research, Inc.

See **Security**, *page 12*

Interlink unveils tools for TCP/IP fault tolerance

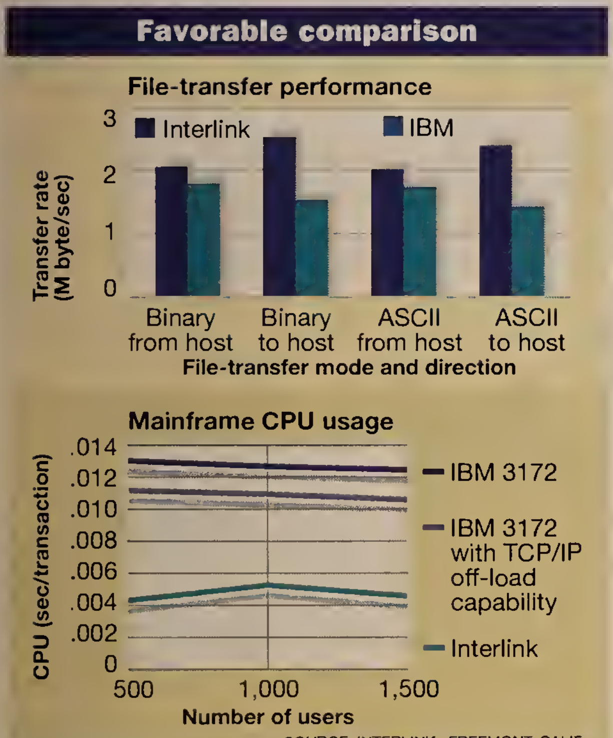
BY MICHAEL COONEY

Fremont, Calif.

Interlink Computer Sciences, Inc. this week will announce TCP/IP software for linking mainframes to LANs that promises to keep communication sessions up even in the event of hardware component failures.

The company will announce the new software, called TCPaccess Fault Tolerant, as well as Version 3.1 of its TCPaccess TCP/IP software for IBM MVS mainframes. Together, the products will give users a level of TCP/IP fault tolerance not previously available, along with new features that will help users more effectively track problems and store data.

See **Interlink**, *page 12*



SOURCE: INTERLINK, FREEMONT, CALIF.

BRIEFS

At **ComNet Washington '95** next week in Washington, D.C. TranSwitch Corp. will introduce an Asynchronous Transfer Mode **switching and multiplexing system.**

Based on TranSwitch's 32-bit Cellbus architecture, Cubit is a modular system providing ATM switching, cell encapsulation and multiplexing functions. Pricing was not disclosed.

TranSwitch: (203) 929-8810.

COMNET PREVIEW

Also at ComNet '95, **Larscom, Inc.** will add **full T-3 multiplexing capabilities** to its Orion 4000 Broadband Access Multiplexer.

The Orion 4000 currently supports fractional T-3 connections by inverse multiplexing multiple T-1 lines. The M13 Multiplexer Module, which will be introduced at the show, will provide full T-3 functionality, including T-1 to T-3 cross-connection. Pricing was not disclosed.

Larscom: (408) 988-6600.

Wandel & Goltermann (W&G) is expected to roll out at the show enhancements to its DominoWAN line of field internetwork analyzers.

DominoWAN, announced last year, analyzes LAN traffic on a WAN link. At ComNet, W&G will roll out Version 1.3 of the DominoWAN software.

The new software will include a feature called LAN Asynchronous Access Monitor that decodes the Point-to-Point Protocol and Serial Line Interface Protocol over asynchronous lines. Version 1.3 will also support bisynchronous protocols, real-time filtering and X.25 packet reassembly.

Also, W&G will roll out an E-1 interface for the DominoWAN analyzer. Version 1.3 is free for existing DominoWAN customers. The E-1 interface costs $2,000. Both will be available in March.

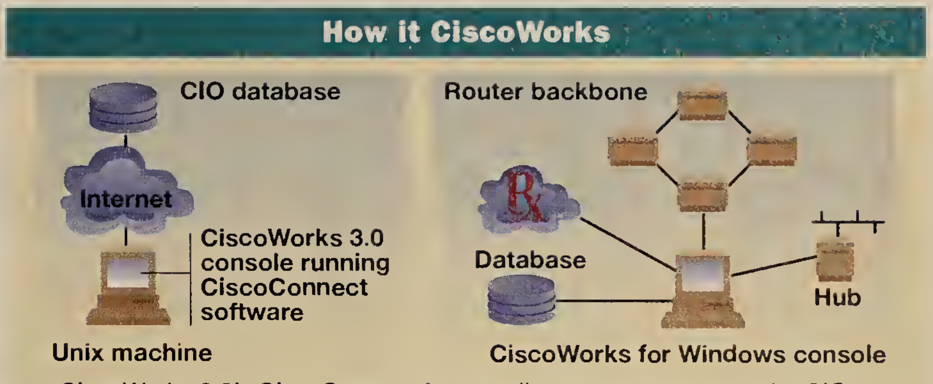
W&G: (919) 460-3300.

Network Design & Analysis Corp. will use ComNet '95 to unveil a Windows-based **performance analysis tool** for multiprotocol internets.

Autonet/Performance — 3 can be used to determine network bottlenecks, application transfer times, the impact of additional workloads and network availability.

Pricing for Autonet/Performance — 3 ranges from $4,000 to $6,000 and is available now.

Network Design & Analysis: (905) 477-9534.


How it CiscoWorks
CIO database
Internet
CiscoWorks 3.0 console running CiscoConnect software
Unix machine
Router backbone
Database
Hub
CiscoWorks for Windows console

CiscoWorks 3.0's CiscoConnect feature allows users to access the CIO service and support database over the Internet. CiscoWorks for Windows can track physical configurations of network devices, create configuration files for multiple routers, monitor the "health" of the network and easily retrieve management information.

GRAPHIC BY SUSAN J. CHAMPENY

Cisco launches network management initiative

BY JIM DUFFY

San Jose, Calif.

Cisco Systems, Inc. last week launched a broad initiative to buttress its network management product and service offerings, as well as help users become more proactive in managing their networks.

At the same time, Cisco announced a program to establish a standard method of collecting information from disparate network devices (*NW*, Dec. 5, 1994, page 1).

Cisco's management initiative, called Network Aware, is intended to provide users with complete knowledge of the configuration and behavior of the enterprise network.

FOLLOW UP

Products announced last week supporting Network Aware are CiscoWorks 3.0 and a version of CiscoWorks that, for the first time, runs under Windows (*NW*, Jan. 9, page 8). Cisco also announced a resale agreement with NETSYS Technologies, Inc. to market NETSYS' Enterprise/Solver line of network planning tools.

CiscoWorks 3.0 — which runs under Unix — includes CiscoConnect, new software that lets network administrators provide up-to-date diagnostic information about their networks electronically to Cisco support personnel. The software establishes a direct link to a Mosaic-based Cisco Information Online (CIO) service at the time a customer service case is submitted, automating the lengthy and error-prone process of gathering diagnostic information for problem resolution.

CIO is housed on a Web server on the Internet.

CiscoWorks 3.0 also will include CiscoView, a new application that lets managers use physical device views to spot problems and access the information needed to solve them. CiscoWorks 3.0 costs $9,995. It will ship in the second quarter.

CiscoWorks for Windows runs on Hewlett-Packard Co.'s OpenView for Windows management platform. It includes the CiscoView application as well as Configuration Builder, for creating configuration files for multiple routers; Health Monitor, for monitoring device attributes, traffic and interface utilization; and Show Commands, for easily accessing detailed management information.

CiscoWorks for Windows costs $2,495. It also will ship in the second quarter.

The resale agreement with NETSYS, meanwhile, will result in Cisco offering NETSYS' Connectivity Toolkit product in the second quarter. Connectivity Toolkit creates a simulated environment that net planners can use to study the impact of net configuration changes before being implemented.

It is priced from $7,500 to $39,995.

Lastly, Cisco launched the Common Internetworking Topology Initiative to develop a standard format for gathering and communicating configuration data from different networked devices. The proposed standard will be submitted to the Internet Engineering Task Force later this year. Companies agreeing to participate include Accugraph Corp., Cabletron Systems, Inc., Chipcom Corp., ISICAD, Inc., Ki Networks, Inc., Optical Data Systems, SunSoft, Inc. and Remedy Corp.

Analysts said Cisco's announcement indicates that vendors increasingly are looking to differentiate their products on how they are managed, not soley on how they perform.

"It shows they're feeling the effects of competition," said Jill Huntington-Lee, principal analyst at Brandywine Network Associates in Cinnaminson, N.J. "It's a reflection of the reality of the way their market is changing."

©Cisco: (408) 526-4000.

INTERNETWORKING MONITOR

by Dan Minoli

Happy birthday, ATM. How old are you now?

I am bullish on ATM technology for enterprise networks.

I believe it is the right technology to enable the introduction of information-intensive applications that may entail large data files, video, image, sound, music, multimedia, videoconferencing, animation and hypertext.

In a few years, these applications will be common in the home as well as the business setting. The movement of this kind of information from servers to clients — whether across a building, a campus, a city, a state, the nation or continents — requires a technology with the characteristics and features ATM affords.

However, inflated claims and/or misinformation about what ATM technology can do serve neither the vendor nor user communities well. And there is plenty of it going around.

Users need to be able to separate hype from reality, potentiality from actuality. Surely, proponents of IEEE 802.6, IEEE 802.9, FDDI-II, switched virtual circuit packet switching and ISO standards including FTAM, Virtual Terminal and transaction processing, all believed that their technologies would enter the mainstream, but history proved them wrong.

Now proponents of 100VG-AnyLAN, various flavors of high-speed and switched Ethernet, and backers of different ATM variations all claim that these technologies will enter the corporation in a big way. Clearly, hype abounds.

Rather than furnishing a litany of examples of such claims with respect to ATM, I'll limit myself to just one.

Toward the end of last year, I received an advertisement for an event with the phrase, "ATM Year Three" written in very large print. The implication, not dispelled anywhere else in the material, was that 1994 was the third year that ATM has been around. (Perhaps the truth was it was the third year that the event took place.)

January 1995 is actually the 10th anniversary of the inception of ATM work as we know it. The CCITT, now ITU-T, started work on broadband ISDN on Jan. 2, 1985, after the completion of the Red Book work for the 1980-1984 cycle. A fundamental set of standards, including early views of ATM itself, saw publication in 1988; more standards appeared in 1990; still more in 1992 and 1994. So from which forum is "Year Three" coming?

I was doing work on issues related to broadband data communications, broadband ISDN and ATM as early as 1986 and 1987. Did ATM appear just overnight, faster then a person can blink, as some would have it? No! Did ATM work start in 1991? No way!

Happy 10th anniversary, ATM.

I am starting a database of misstatements about ATM in order to build a file to be used for teaching purposes. If you wish to contribute to this salubrious undertaking, please E-mail me any such statements you may see and where they appeared.

➻ Minoli is a principal consultant at DVI Communications, a full-service consultancy in data, voice and video based in New York. He can be reached at minoli@pipeline.com. Minoli shares this space with Scott Bradner, whose column will appear next week.

Interlink

Continued from page 11

TCPaccess is a direct alternative to IBM's TCP/IP for MVS product, which supports TCP/IP-based LAN-to-mainframe connectivity.

But according to Chris Markle, chief technology officer for Interlink, TCPaccess is able to perform functions such as file transfers as much as 60% faster and employ less than half the mainframe cycles used by IBM's product (see graphic, page 11).

"With the fault-tolerant feature, we are trying to give mainframe TCP/IP users the same high levels of availability and reliability they've grown accustomed to in the SNA world," Markle said.

TCPaccess Fault Tolerant is a mainframe-based software module that sits on top of Interlink's core TCPaccess product. The module supports a multiplexing feature and TCP/IP's Address Resolution Protocol (ARP) to handle controller failures.

The feature lets users define, or multiplex, two to eight controllers, such as an IBM 3172 Interconnect Controller, to a single TCP/IP address space on the mainframe. Once defined, this multiplex facility monitors local controllers for failures and uses ARP to direct the host to a new controller in the event of a failure.

For routers attached to the mainframe, the fault-tolerant feature supports the Open Shortest Path First (OSPF) and Routing Information Protocol (RIP).

OSPF lets the mainframe detect and update changes in a router-based internet. If a router or link between a router and mainframe fails, the fault-tolerant applications automatically reroute traffic to the next available router, keeping the session alive.

"Fault tolerance has been one of the biggest barriers to implementing TCP/IP in large enterprise environments," said Lucinda Santisario-Borovick, research manager of computer networking architectures for International Data Corp. in Framingham, Mass. "This feature brings down that barrier and should make users feel more comfortable about using TCP/IP for mission-critical applications."

"Fault tolerance has been one of the biggest barriers to implementing TCP/IP in large enterprise environments."

Chuck Nagy, lead systems engineer with the University of Pittsburgh Medical Center, which uses TCPaccess, said losing sessions for any amount of time can "get very sticky."

"We like to build redundancy in wherever we can, and this is a feature we've been asking for," he said.

In addition to rolling out the new product, Interlink added support to TCPaccess for IBM's Systems Managed Storage facility and added the ability to initiate an unlimited number of files simultaneously with a single request.

TCPaccess 3.1 and TCPaccess Fault Tolerant will be available in March. TCPaccess 3.1 pricing starts at $18,000, and TCPaccess Fault Tolerant pricing starts at $14,000. Prices are based on CPU size.

©Interlink: (800) 422-3711.

Comments?

See "How to reach us" on the back page.

Security

Continued from page 11

"This allows token-based authentication to be used across the entire LAN internetwork, not just with the dial-in user. It can be used to protect NetWare servers in addition to Unix servers."

One of the first beta users is Karl Tianen, Ameritech's manager of data communications security. "We'll be testing this and, for the first time, opening our Novell network to remote access," he said.

Jim Geary, Security Dynamics' vice president of marketing, said the company may develop an ACE/Client version for the more recent NetWare Version 4.0 if customer demand proves sufficient.

ROSATI

To tackle the problem of keeping network data confidential, TimeStep next month will step in with its PC-based Permit Network-Layer Security System.

Based on an emerging internet standard called the IP Security Protocol, which uses public-key encryption technology, the product encrypts and decrypts files and electronic mail for users whose PC has the software installed.

Since the software can cause communications slowdowns, depending on a PC's CPU and other factors, TimeStep also will offer a hardware option in the form of a special PC LAN adapter card to boost processing speed.

Tony Rosati, vice president of product development at TimeStep, said the company is also working on a secure Ethernet bridge, set to ship in April, for encrypting entire LAN segments.

©Security Dynamics: (617) 547-7820; TimeStep: (613) 599-3610.

CONNECTIVITY

New ISDN server uses OS features for remote access

BY MICHAEL CSENGER

Salem, N.H.

Primary Rate, Inc. last week introduced an ISDN-based remote access server with client software that leverages the connectivity features found in the latest network and personal computer operating systems.

The PowerLane family comprises internal boards that provide ISDN connectivity and remote access functions for systems running Microsoft Corp.'s Windows NT and Apple Computer, Inc.'s Macintosh System 7.X. While most vendors provide their own connectivity software, Primary Rate uses the remote access features found in these operating systems for the PowerLane family.

Windows NT, for example, provides data compression, password protection, encryption and Point-to-Point Protocol (PPP) support, among other things. Apple's AppleTalk Remote Access Protocol likewise offers security features and compression, with PPP handled by third-party software that Primary Rate bundles into the package.

Leveraging these operating system features helps ensure interoperability with many platforms while lowering the cost and processing overhead of the Primary Rate cards, the company said.

While Primary Rate plans to eventually add support for analog modem connectivity, the PowerLane family initially will be purely ISDN-based. Remote clients can access their corporate LANs over 128K bit/sec ISDN Basic Rate Interface connections, multiplexing both B channels. The central-site server either can take those calls as individual BRIs or over a bundled Primary Rate Interface that combines as many as 23 BRIs.

Unique among ISDN products, the PowerLane will be preconfigured for ISDN access and with a provisioning service that helps users deal with the barrage of parameters that must be configured to ensure interoperability with different carrier switches.

"Most vendors just take your check and then heave their product over the wall to you, and good luck," said Mark Galvin, Primary Rate's president and chief executive officer. "But if you give us your address and six digits of your phone number, we can tell you right then whether ISDN is available to you. And we'll handle every detail with the carrier ourselves."

PowerLane will ship at the end of February. Prices will range from $7,995 for a 48-client server to $895 for a two-client version. Client software will cost $675 per client and will include an ISDN adapter board.

©Primary Access: (603) 898-1800.

Reality ✓ Check

Product: PowerLane family of remote access servers
Company: Primary Rate

The benefits:
- ISDN BRI and PRI connectivity.
- ISDN service setup and hardware configuration included.

The drawbacks:
- No analog modem compatibility.
- No interworking between Macintosh- and PC-based systems.

The user view:
"Configuring ISDN services and hardware is a screwy business to get into. We offer a similar service just in PacBell territory and run into all sorts of issues. So I hope [Primary Rate realizes] all the implications of what they're getting into."

Gigi Wang, director of business development, Internex Information Services (an ISDN Internet access provider)

LOCAL NETWORKS

Operating Systems, Management, Hubs, Adapters and Other Equipment

Farallon first to fast Ethernet Mac mart

BY JODI COHEN

Alameda, Calif.

Farallon Computing, Inc. recently announced it plans to bring the Macintosh market up to speed with a new line of fast Ethernet products.

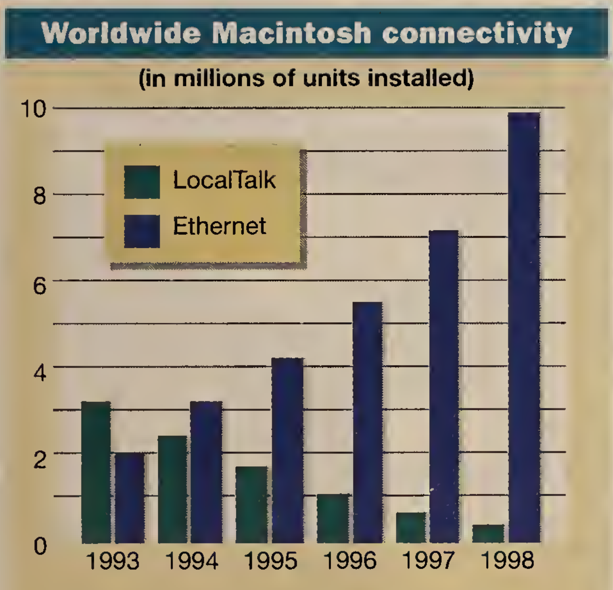
The firm will be the first to offer Macintosh users connectivity products based on the IEEE 802.3 fast Ethernet specification for 100Base-TX. This technology supports 100M bit/sec transmission over two pairs of Category 5 unshielded twisted-pair cabling.

Farallon, an established Macintosh connectivity product supplier, will include in its first line of fast Ethernet products Peripheral Component Interconnect (PCI) network adapter cards for Power Macintoshes, as well as NuBus 10/100 cards for Power Macintoshes, Quadras and Macintosh IIs. All of the cards will support 10Base-T and 100Base-TX, and will be based on 3Com Corp.'s 10/100 Ethernet chipset.

Farallon also plans to release a fast Ethernet workgroup hub and 10/100 bridge family. The hub will connect Macintoshes and personal computers with any standard 100Base-TX cards installed. The bridge will link 100Base-TX and 10Base-T hubs. The company declined to be more specific about these future products.

Michael Heylin, senior associate for

See Farallon, *page 16*


Worldwide Macintosh connectivity

(in millions of units installed)

Farallon hopes to entice users moving away from LocalTalk with new fast Ethernet gear.

GRAPHIC BY TERRI MITCHELL SOURCE: IDC, FRAMINGHAM, MASS.

Chipcom branches out with new stackable hubs

BY JODI COHEN

Southborough, Mass.

Chipcom Corp. today will announce its enhanced Onsemble stackable hub line, which will bring high-level net management and internetworking features to remote sites.

The new Onsemble StackSystem line, based on technology obtained through the acquisition of DAVID Systems, Inc. last year, includes token-ring and Ethernet stackables that will deliver many sophisticated features typically found in chassis-based hubs.

The new hubs represent a renewed focus by Chipcom this year on the stackable hub market, an area in which company officials acknowledged Chipcom has lagged.

> **"[Chipcom] is late to market, but the question is, are they late with a better product?" Dagres asked.**

Under the StackSystem architecture, users will be able to install a base hub and stack as many as seven expansion hubs — each with 16 token-ring or 24 Ethernet ports — atop it. Users will be able to add another box on the stack to provide internetworking functionality, while fault tolerance will be built into the entire stack.

"Chipcom's emphasis is on addressing the specific needs of the remote site," said Frank Fuller, the company's director of product marketing. "[StackSystem] was created to fulfill the increasingly higher network functionality requirements of this part of the enterprise net."

The StackSystem is manageable both locally and remotely — via the Remote Monitoring Management Information Base — from any Simple Network Management Protocol-based system. The new stackables also use Chipcom's Signature Memory feature for inventory tracking and troubleshooting.

The new hubs also will support internetworking features via modules provided by other vendors through Chipcom's OpenHub partners program. Bridge, router and other modules will be available from the likes of Cisco Systems, Inc., IBM, Sync Research, Inc. and 3Com Corp.

One feature that could make the StackSystem token-ring line particularly strong is Chipcom's PowerRing technology, which includes features such as active retiming and automatic beacon recovery.

Chipcom's original Onsemble hubs, which were made by Intellicom, Inc. and resold by Chipcom, lack the manageability and other advanced features of the StackSystem hubs. However, Chipcom plans to continue selling its low-end hubs.

According to Todd Dagres, vice president of The Robinson-Humphrey Company, Inc. in Atlanta, the new stackables will really fill out Chipcom's product line. However, he is unsure how competitive StackSystem will be since it was beaten to market by products from Cabletron Systems, Inc. and Bay Networks, Inc.

"[Chipcom] is late to market, but the question is, are they late with a better product?" he asked.

Throughout the year, Chipcom will add higher speed interfaces to the StackSystem line, including those for fast Ethernet, 100VG-AnyLAN and Asynchronous Transfer Mode. Chipcom also will integrate switching technology into the hubs, but the company declined to be more specific about these future products.

The base token-ring hub will cost $3,395, and the base Ethernet hub will cost $2,195. Both products will be available in early spring.

©Chipcom: (508) 460-8900.

Mac developers introduce management tools at show

BY PEGGY WATT

San Francisco

New network management tools from The AG Group, Inc. and Sassafras Software, Inc. were among the highlights of Macintosh networking announcements at the recent MacWorld Expo here.

The AG Group rolled out Skyline/Satellite, a pair of software modules that together provide network data collection, monitoring and analysis.

MACWORLD EXPOSITION

The Macintosh-based Satellite software monitors and saves information on network activity, and performs packet counts in definable time increments, said David Burk, The AG Group's marketing director. Satellite currently is designed to run on any Macintosh client or server on an Ethernet LAN. LocalTalk and token-ring versions are also in the works. No software is required on desktop nodes.

Using Skyline, network managers can identify traffic type and protocols used, as well as traffic volume and trends.

"A manager can customize controls, what they're monitoring and reports," Burk said. He recommended using one copy of Satellite for as many as 100 nodes on a net, depending on traffic.

An entry package with one Skyline and one Satellite module costs $795. An additional Satellite costs $300, and a pack of five Satellites costs $1,195. Introductory discounts are available through this month.

Separately, Sassafras added support for Windows clients to its Macintosh server-based KeyServer software management program, which runs on AppleTalk, TCP/IP and IPX networks. KeyServer 4.0 manages access to network-based applications via the number of licenses and queues users waiting for an application. It keeps usage logs to help managers determine the need for additional resources.

See Mgmt. tools, *page 16*

BRIEFS

Tandem Computers, Inc. last week announced upgrades to its **Himalaya and Integrity servers.** The Himalaya Model K10000 has been replaced by the K2, K200, K2000 and K20000 parallel servers. The Reduced Instruction Set Computing-based systems, which compete with products such as IBM's RISC System/6000, can be outfitted with 16 to 4,000 processors.

Tandem also extended its Integrity line with symmetric multiprocessor-based NR4412 and NR4436 models that can support as many as 36 processors and run Unix Version V Release 4. The Himalaya models will be available in March, with pricing starting at $25,000. The Integrity servers are available now and priced starting at $97,000.

Tandem (408) 285-6000.

IBM has updated its **LAN Server for AIX** network operating system to include OS/2 LAN Server features, including a single logon, domains and network aliases. Servers running Version 1.1 of the software can be managed from AIX or OS/2 workstations.

LAN Server for AIX 1.1 runs on the RISC System/6000 and supports data and resource access from LAN Server DOS, Windows and OS/2 clients, as well as LAN Manager, Windows NT and Windows for Workgroup clients. LAN Server for AIX 1.1 is shipping now and is priced starting at $1,900. LAN Server for AIX 1.0 users can upgrade for free.

IBM: (800) 426-2255.

The Eagle has landed. . .again. **Eagle Technology,** which started as a business unit of Novell, Inc. and made short stays with Anthem Electronics, Inc. and Artisoft, Inc., has been sold — for a fourth time — to **Microdyne Corp.** of Alexandria, Va. Microdyne will pay Artisoft about $17.5 million for Eagle — $10 million for inventory, plus $7.5 million for the company itself. Microdyne will continue to develop and sell Eagle Ethernet adapters, according to Dale D'Alessio, senior vice president of sales, who says Eagle has found "its final home" with Microdyne.

Reasons to rely o
Matrix-UPS ke

Editors and users agree: Matrix-UPS™ means mission-critical protection

When we introduced Matrix-UPS we knew its 100% uptime design and low lifecycle costs would get some attention, but the uninterrupted kudos since then mean even more reasons to choose Matrix-UPS to protect your mission-critical systems.

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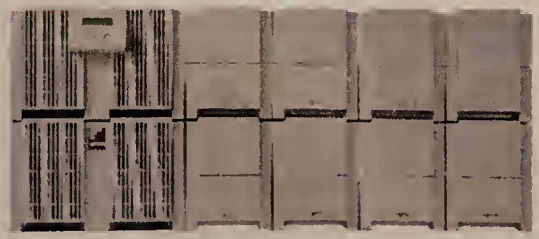
SCO OK



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Environmental and power monitoring provides "glass room" level security

SNMP support and auto-server shutdown (for NetWare, Notes, UNIX, NT, OS/400, VAX, Sun and more) protects data, lowers support costs

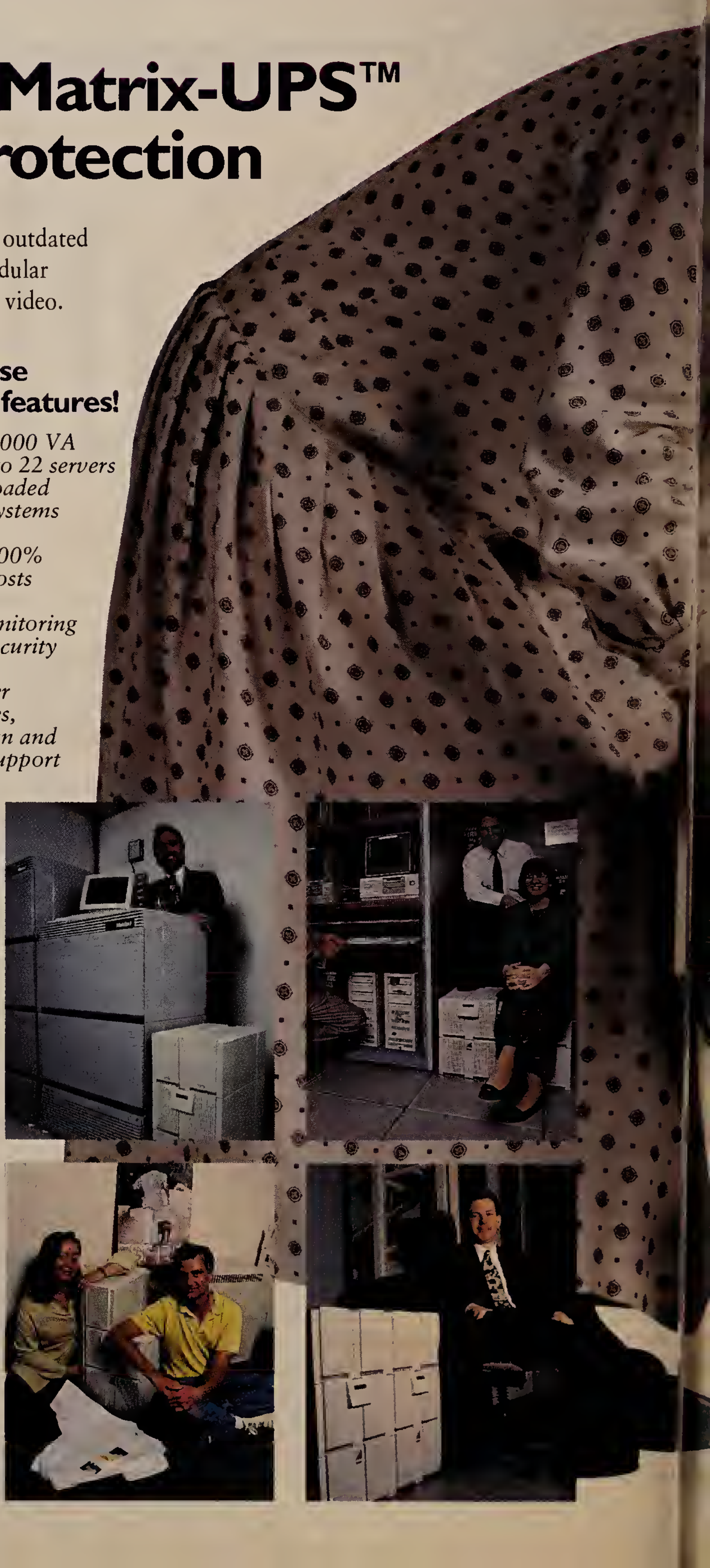
Matrix-UPS delivers mission-critical protection for today's applications
(clockwise from top right)

Mutiple fileservers at Beth Israel Hospital

Internetworking equipment at Lutheran General Hospital

Midrange and network systems at Esprit

Telecom equipment at Ricard Int'l.



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INFO WORLD

"Powerful, secure, manageable...sterling... With all its features and power, the Matrix remains a surprisingly small-footprint UPS..."

TELECONNECT

"APC killed many birds with one stone...It's cost-effective. It saves time. It's reliable. It's environmentally smart..."

PCWEEK Netweek

"[One of] 10 products...that I wouldn't hesitate to write checks for in the coming year...Protect your fileserver or an AS/400..."

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Mgmt. tools

Continued from page 13

KeyServer can manage multiple servers and desktops but does not require a dedicated server. Its portable keys feature lets applications be checked out for use on a PowerBook. That feature will be extended from PowerBooks to Windows machines this year, said John Tomeny, Sassafras' marketing director.

KeyServer is priced at $30 to $70 per user.

"We work with companies with enclaves of Macs and PCs," said Dorian Couglas, president of Network Frontiers, a San Francisco consulting firm. "[These firms] need a management tool like this one."

©The AG Group: (510) 937-7900; Sassafras: (603) 643-3351.

Farallon

Continued from page 13

Creative Strategies Consulting, Inc. in San Francisco, said fast Ethernet products could be helpful for users that run multimedia applications on their Macintoshes.

"Anything with video is such a drain on network bandwidth," he said.

But Esmeralda Silva, an analyst with International Data Corp. in Framingham, Mass., said today's desktops are still primarily working with data, and there is only a need for fast Ethernet when you integrate voice, video and data in a real-time environment.

Nevertheless, Farallon will have company in the Macintosh fast Ethernet market from Apple Computer, Inc., according to Karen Quek, product-line manager for Apple. Apple plans to enter the market with PCI-based systems in the second half of this year.

Farallon enters the fast Ethernet arena just as many of the big hub companies are hedging bets on 100Base-T and Hewlett-Packard Co.'s and AT&T's 100VG-AnyLAN high-speed Ethernet proposal by developing products supporting both technologies.

Heylin said Farallon wants to use fast Ethernet to attract people still using LocalTalk, Apple's cabling scheme for AppleTalk nets. But fast Ethernet is merely an interim step to Asynchronous Transfer Mode to the desktop, he said.

Farallon's NuBus cards will ship in the spring, and the PCI cards will ship this summer. The hub and bridge will be available in the second half of this year. Pricing has not been announced.

©Farallon: (510) 814-5000.

NET RESULTS

by Mark Gibbs

GIFgate — Nothing is sacred

Do you remember when Burroughs Corp. and Sperry Corp. decided to merge? They announced they would need a new name for the company, and, if memory correctly serves me, they paid a lot for the result: Unisys Corp.

At the time, a number of jokes circulated in the industry along the line of, "Why didn't they use 'Spurroughs' or 'Berrys'?"

Now that the GIF fiasco has surfaced (*NW*, Jan. 9, page 4), we can see that better choices might have been "Opportunists" or "Predators."

For those of you who have not heard yet, the ubiquitous GIF created by CompuServe, Inc. is no longer in the public domain. CompuServe developed GIF in 1987 and granted a "nonexclusive, royalty-free" license for use of the standard, which was placed in the public domain. Since then, GIF has become one of the most widely used technologies for encoding images. And while it is hardly leading edge (for example, it supports color resolution only up to 256 colors), GIF is a universal format.

But it turns out the compression method used in GIF's encoding scheme was patented by Unisys in 1985.

The background to "GIFgate" is that Unisys got in touch with CompuServe in early 1993. Unisys said something along the lines of, "Stand and deliver." Ah, yes, the time-honored phrase of all highway robbers – nice to see old traditions don't die easily.

The result of this ultimatum was a protracted period of negotiation and the creation of the CompuServe GIF Developer Agreement. Under terms of the pact, executed June 21, 1994, CompuServe said it would implement the agreement "as soon as reasonably practicable and in no case later than six months after the date this agreement is executed..."

The six-month period ended Dec. 21. Curiously, CompuServe kept the whole mess under wraps until Dec. 29 – when everyone would be expecting such an important announcement. The timing of the announcement was such that CompuServe gave GIF developers a ridiculously short time in which to get licensed.

Unisys claimed it only became aware of the use of its Lempel-Ziv-Welch (LZW) compression format in GIF two years ago, five years after the release of the GIF standard. Unisys said it did not have the staff resources to track such things.

Frankly, I don't believe it. It seems more likely that some brain-dead executive at Unisys thought he could improve the company's cash flow by holding GIF developers hostage.

We all know Unisys has fallen on hard times, but this will not save anything. Indeed, this may make "Pentium-gate" look like a mere oversight.

For developers, terms of the CompuServe GIF Developer Agreement are a little steep. If you use GIF in freeware, you are exempt from paying a royalty. But if you sell software, you are asked to pay a onetime fee of $1.15 for every copy you sell, or 1.5% of your gross sales. That is outrageous.

Sure sounds to me like an attempt to plunder the market. Worse still, it seems CompuServe is making a profit – 0.5%, according to Unisys – from the license fees, contrary to what CompuServe said in its press release.

Who exactly are the bad guys in this story?

Well, CompuServe is not entirely blameless. Without doubt, heads should roll in the marketing department.

But the real hoodlum is Unisys, which has turned the LZW patent into a "submarine" – the term for a patent surfacing at some time after your product is in the market and sinks you. This behavior smacks of the worst kind of opportunism, and shows a blatant and hostile attitude toward the market on Unisys' part.

What's next? First Intel Corp., now Unisys and CompuServe. I understand IBM holds a patent for scrolling the screen on a computer when it fills up with text...

Watch out my friends, nothing is sacred.

➻ Gibbs is a consultant and writer in Ventura, Calif. He can be reached at (800) 622-1108, Ext. 504, or via the Internet at mgibbs@rain.org.

INTERNET *tip*

BY MARK GIBBS

One in a series of occasional tips on Internet-based information services.

GIF grab bag

To stay up-to-date on the GIF situation, there are several Internet-based sources to check out:

To access: Point your Web browser at **http://gnn.com/gnn/meta/imedia/news/gif.html** for O'Reilly's Global Network Navigator; **http://www.compuserve.com** for CompuServe information; **http://www.unisys.com** for Unisys information; **http://www.compuserve.com/isd/news_rel/gif.html** for a GIF Developer Agreement update; or target the **comp.graphics.algorithms** newsgroup.

Windows Connectivity Forum

E-Mail Connection gets connectivity upgrade

By Joel Diamond
Technical director
WUGNET
Windows User Group Network
76702.1023@CompuServe.com

We just learned ConnectSoft, developer of the award-winning E-Mail Connection software package, plans to incorporate TCP/IP WinSock 1.1 support and an array of new features in Version 3.0.

I have been anticipating this new release since last summer, when I began using E-Mail Connection when trying to manage several private and public network mailboxes, including our in-house Windows for Workgroups 3.11 Microsoft Mail system.

Other features on tap include direct connections to E-mail services from America Online, Inc. and Radiomail Corp. Version 2.0 supports Vendor Independent Messaging (VIM), Message Handling Service (MHS) and Microsoft's Messaging Application Programming Interface, along with dial-up support for CompuServe, Prodigy and MCI Mail. It also provides gateways to EasyLink, AppleLink and GEnie.

We plan to test Version 3.0's new features and discuss them in WINCON in the EMAIL and MESSAGING sections.

TIP OF THE WEEK

Steve Scoggins, WINCON co-sysop, is the official author of the Windows NT Internet Frequently Asked Questions (FAQ) document, now available on WINCON.

This FAQ document is an indispensable resource for any Windows NT user who wants to access the Internet from a Windows NT 3.5 workstation.

Here is a sample of problems and questions in the document (which also provides the answers):

- Where can I locate the latest Microsoft Windows NT 3.5 hardware compatibility list?
- Help! My Remote Access Server PPP/SLIP connection is not working.
- How do I enable IP routing between a Windows NT Advanced Server (NTAS) system with a PPP/SLIP connection to the Internet and the local IP subnet?
- What WinSock software works with Windows NT or Windows NTAS 3.5?
- Where can I find a World-Wide Web server for Windows NT?

The FAQ document is available in WINCON Library 10 in the NTFAQ1.ZIP file. Scoggins also is available on the forum to take on any of your questions about accessing the Internet from Windows NT. His E-mail address is sscoggin@enet.net, and he also can be reached at 74431,1332 on WINCON.

CompuServe®

To participate on the Windows Connectivity Forum, type **Go Wincon** at any **!** prompt on CompuServe. For those of you who are not CompuServe subscribers, *Network World* and the Windows Users Group Network are offering a free membership sign-up by calling (800) 524-3388. Ask for Operator 426.

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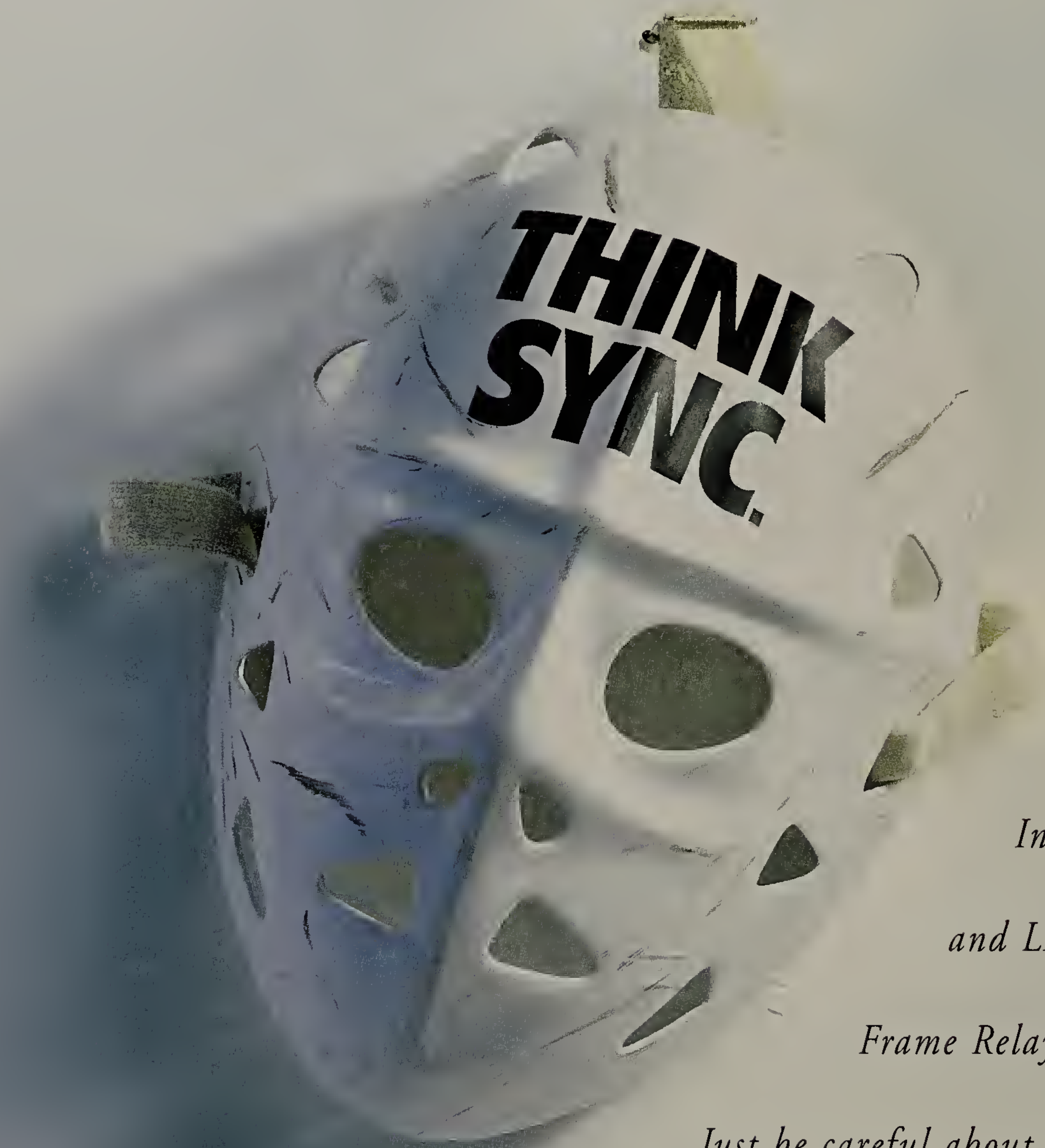

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GLOBAL SERVICES

Voice and Data Services, Mobile Computing, Regulatory Issues and Voice CPE

Sprint goes after the pioneer's gold in PCS

BY DAVID ROHDE

Washington, D.C.

Sprint Corp. and its cable company partners last week took a new step toward establishing a nationwide wireless network by acquiring a company that holds one of the three broadband PCS licenses already awarded.

The joint venture took a 49% stake in American Personal Communications, L.P. (APC), a personal communications services provider that had been majority-owned by the Washington Post Co. Sprint's partners in the venture, announced last fall as an overall local telephony initiative, include cable giants Cox Cable Communications, Inc., Comcast Corp. and Tele-Communications, Inc. (*NW*, Oct. 31, page 1).

Come hither, new players

Sprint's joint venture with three cable companies is pitching these advantages to other wireless and cable providers that elect to join:

- Integrated billing and customer service systems
- A share in venture's expected wire-line revenue
- Assistance in acquiring capital for network buildout
- Economies of scale in purchasing

While major players slug it out for PCS licenses in the multibillion-dollar auction sponsored by the Federal Communications Commission, APC already holds a broadband pioneer's license for the Washington-Baltimore region, the 10th largest in the nation.

And since Cox Cable owns a pioneer's preference license in Southern California, the No. 2 market, the Sprint-cable TV venture now controls two-thirds of the pioneer's awards.

Sprint officials said they might even go after the third pioneer's preference, held by Omnipoint Communications, Inc. for the No. 1 region, New York. "We don't rule out affiliating with anybody," a Sprint spokesman said.

Such an affiliation could take place even without the Sprint-CATV venture actually buying an equity stake in Omnipoint. Instead, Omnipoint could join the venture's affiliate program – initially designed for CATV companies interested in joining the original three CATV partners – in getting into the telephone

See **Sprint**, *page 20*

MCI butts heads with AT&T

MCI Communications Corp. is going head-to-head with the AT&T-McCaw Cellular, Inc. wireless team in the paging arena.

MCI has signed resale agreements with paging giants Paging Network, Inc. (PageNet) and SkyTel Corp. that allow it to bundle one-way wireless messaging with long-distance and other service offerings under the MCI name.

The deals were announced at the Consumer Electronics Show early this month on the same day AT&T said it would offer end-to-end paging services and devices via its relationship with wireless messaging partner McCaw. The MCI deals are consistent with its plan to resell wireless services, a strategy that took effect after MCI's attempts to purchase an equity stake in specialized mobile radio operator Nextel Communications, Inc. fizzled last fall.

And one-way paging is just the tip of the iceberg. PageNet and Mobile Telecommunications, Inc. (MTel), SkyTel's corporate parent, as well as competitor McCaw, won licenses last summer in the federal narrowband personal communications services (PCS) auctions. Narrowband PCS promises to support two-way paging, a potential sleeper for inexpensive wireless messaging.

Brian Brewer, vice president of marketing in MCI's business markets division, said $40-and-up two-way radio mail applications today are like "driving a nail with a sledgehammer." MCI-branded two-way paging services will emerge throughout the year as PageNet and MTel roll out services, he said.

Meanwhile, AT&T has started selling McCaw paging services to its customers through AT&T Phone Center stores, but it does not yet offer a single integrated billing scheme with long-distance services.

MCI has one-upped AT&T on that score, but Elliott Hamilton, director of U.S. wireless communications at Washington, D.C. consulting firm Malarkey Taylor-EMCI, said, "The dollar amounts simply aren't that great that this makes much of a difference to the business customer."

BY JOANIE WEXLER

BRIEFS

PC connectivity vendor **WRQ** is expected to announce today that it is teaming with McCaw Cellular Communications, Inc. to develop **Cellular Digital Packet Data (CDPD)** products and services. WRQ makes TCP/IP software customized for use on wireless networks; TCP/IP is specified as the transport and network-layer protocols for emerging CDPD nets.

MCI Communications Corp. changed its policy of automatically billing for directory assistance calls made to its **1-800-CALL-INFO** number and offering to place calls at regular toll rates. Now MCI will first ask callers for credit cards or calling cards, or will establish prearranged billing methods. AT&T had complained to the Federal Communications Commission that MCI's previous policy violated 800-number integrity.

Ameritech Corp. last week announced that it will enter into reciprocal **compensation agreements** with competitors that want to enable phone calls originating from their networks in Illinois to reach Ameritech customers. **Teleport Communications Group (TCG),** one of the potential competitors, slammed the offer as "an attempt to thwart the development of local telephone competition" because the firm fears that the rate Ameritech charges will be too high to let it compete in the local market. The Illinois Commerce Commission is hearing complaints by TCG, MCI Communications Corp. and Metropolitan Fiber Systems, Inc. over interconnection practices.

Large products firm puts net uptime in HP's hands

BY JOANIE WEXLER

Carrollton, Texas

Another large network outsourcing deal has gone down in this "no one can do it alone" era of rapidly changing technology.

Health care products giant FoxMeyer Health Corp. has given Hewlett-Packard Co. responsibility for network uptime on its nationwide client/server network, which it has been building since last year, also with HP's help. The three-year outsourcing deal is valued at about $750,000.

Outsourcing appeal

Turning to outsourcing services from HP allowed FoxMeyer to:

- Circumvent a $250,000 up-front investment in net management tools.
- Quickly gain access to HP's pool of technical resources for help in ongoing network decisions.
- Avoid hiring a half-dozen full-time staffers.

The proliferation of client/server architectures is the primary driver behind user demand for outsourcing services, according to a survey of more than 200 companies conducted last November by Dataquest Worldwide Services Group in Framingham, Mass. Client/server was cited by 43% of respondents as an outsourcing impetus, whereas the next largest category, high-speed data communications, was cited by 30%.

Aside from proactively monitoring the 2,000 10Base-T LAN nodes scattered among 18 FoxMeyer divisions and corporate headquarters here, HP also has been given responsibility for managing Sprint Corp. and the performance of its frame relay network for FoxMeyer.

Network availability is specified in the contract at 99% "with caveats," said Michael Applegate, network services manager at FoxMeyer, a $5.5 billion company.

He said it took nearly four months to compose the five pages of the contract that define network availability and how HP's performance in maintaining it will be measured, given that HP cannot be responsible for, say, a fiber cut in Sprint's network.

Sprint configures and maintains the routers at the entry points of the network. However, HP, via OpenView management tools in its operations center in Atlanta, sees when a node has been isolated and works with Sprint to get the problem resolved.

See **Net uptime**, *page 20*

IntelliCom boasts hassle-free ISDN setup and service

BY TIM GREENE

Exton, Pa.

IntelliCom Solutions, Inc. is offering help to users that are tired of going through the often-frustrating and time-consuming process of ordering ISDN service from local exchange carriers (LEC).

The network integration service company offers authorized customers free access to its database of LEC ISDN availability and pricing information, and will arrange for installation of ISDN lines.

The service is similar in scope to the solution being sought by the Switched Digital Services Applications Forum – centralized, updated information about ISDN lines. It differs in that the forum wants such a database to be offered on-line.

With its database service, IntelliCom deals directly with the local carrier to order the lines the user needs and coordinates the arrival of the user's ISDN hardware, according to Kurt Skowronek, network services manager for IntelliCom.

The service is free to users that buy their hardware through Intelligent Electronics, a reseller of telecommunications hardware and the parent of IntelliCom.

For noncustomers, the service costs $35 for a loop qualification report, plus a varying fee for arranging lines, depending on what the customer needs. The company coordinates hardware arrival only for customers of Intelligent Electronics resellers.

Greg Descheemaeker, a network product specialist for Quest Media and Supplies, which buys equip-

See **ISDN setup**, *page 20*

AT&T adjusts local access pricing

BY DAVID ROHDE

Washington, D.C.

AT&T is trying to keep users in big cities that now buy T-1 local access through its access coordination program from being tempted into buying directly from local exchange carriers.

The carrier has filed revisions to its T-1 local channel prices with the Federal Communications Commission that, on average, would reduce mileage-sensitive channel prices by 1.9%. Pending FCC approval, the new rates take effect on Friday.

But since AT&T now prices local channels separately for every local exchange in the country, the overall effect on users is varied, with some prices increasing (see graphic).

In general, the carrier reduced prices in cities such as New York and San Francisco, where local carriers are reducing their own T-1 rates because of competition, according to Pat Hatalla, manager of AT&T's Accunet access products management.

Even in these places, the AT&T move is muted by a simultaneous proposal to raise AT&T's access connection charge — for connecting each T-1 local line to long-distance services at AT&T central offices (CO) — by $8 to $15. As a result, even some of the lower channel prices could result in a wash for customers.

As an alternative, some LECs can provide discounted dedicated access to AT&T COs through contract tariffs, said Bruce Thatcher, president of Tel-Con Associates, Inc., a telephone bill auditing firm in Overland Park, Kan.

The nearer the better

AT&T monthly prices for T-1 local channels in selected markets, not including access charges:

City	Miles from AT&T office	Old price	New price
New York	0	$448.08	$417.35
	2	$566.46	$533.91
Chicago	0	$300.74	$301.64
	8	$634.30	$640.90
San Francisco	0	$208.88	$205.54
	18	$757.26	$723.36

New prices take effect Friday, pending FCC approval.

ISDN setup

Continued from page 19

ment through Intelligent Electronics, said the service has lived up to its promise. He collects the customer information IntelliCom needs, and IntelliCom does the rest.

Robert Rosenberg, president of Insight Research Corp. in Livingston, N.J., a telecommunications market research firm, said the service could address a big LEC failing. "The problem for a small businessperson is to find a phone company that realizes people expect to buy ISDN much [the same way] as any hardware or software," he said. "You expect a sales staff."

To employ the service, a user lets IntelliCom know what kind of ISDN line it wants, along with site locations, existing telephone numbers and the like, all of which IntelliCom inputs into its personal computer-based database.

ISDN report card

	IntelliCom uses this form to grade RBOCs on each ISDN transaction.
☑	Is there a single phone number for ISDN information?
☑	Are loop qualifications confirmed in less than 48 hours?
☑	Are orders acceptable by fax or phone?
☑	Is the time from order to provisioning less than 14 days?
☑	Is there a single phone number for ISDN ordering?
☑	Is there a single point of contact to place orders?
☑	Is there a defined escalation process for problem orders?
☑	Are trouble tickets resolved within 24 hours?
☑	Is there a single point of contact for troubleshooting?
☑	How many loop qualifications come back as ISDN-unavailable?

The information is formatted and faxed to the relevant LEC, with the goal of getting a loop qualification report back within 48 hours. Sometimes the LEC can answer within a few hours, and sometimes it takes a week, Skowronek said.

IntelliCom is trying to improve LEC responsiveness by giving them a report card on each order (see graphic).

The company said Ameritech Corp., Bell Atlantic Corp. and Pacific Bell are the LECs best prepared to deal with ISDN requests but would not rank the rest. "We prefer just to focus on the strength and then work with the other guys," Skowronek said.

©IntelliCom: (610) 458-6668.

Sprint

Continued from page 19

business (see graphic, page 19).

Sprint's latest move resulted from a congressional decision late last year to charge for the pioneer's preference licenses, which were originally to be free but are now expected to be tagged at tens of millions of dollars by the FCC, in response to protests from the cellular telephone industry.

The Sprint-CATV venture helped the Washington Post company pay the fee by ponying up $23 million for its share of APC, with APC's managing partner raising its own stake to 49.5% for an additional $10 million. The Washington Post agreed to hold on to 1.5% ownership to prevent any entity from reaching 50%, a figure that would have triggered regulatory reviews.

Following announcement of the APC deal, bidding shot up at the FCC auction for the second broadband Washington-Baltimore license, as wireless affiliates of AT&T and GTE Corp. leapfrogged each other $5 million at a time in successive rounds.

And with PCS bidding soaring, the APC deal further raises Sprint's financial stake in the wireless derby, given its current lead in the bidding for many of the other regional broadband licenses. Sprint hopes to receive new equity capital from France Telecom and Deutsche Telekom in a separate deal being aggressively challenged by AT&T. But it is covered in any case for the PCS license cost by lines of credit, said John Hoffman, Sprint's executive vice president.

Net uptime

Continued from page 19

Perhaps more important, HP performs continual statistical analysis of the FoxMeyer net so it can suggest tweaks to optimize performance.

"There was no way we could buy that technical talent on the street in the time frame needed," Applegate said. It would have taken five or six people with extensive knowledge of OpenView tools to perform the 24-hour monitoring FoxMeyer sought, he said. "Those guys are expensive commodities and are hard to find."

Applegate added that the cost of using HP personnel instead of his own was "very close."

Meanwhile, Applegate said he was able to avoid an up-front $250,000 investment in net management tools and, more importantly, avert the ramp-up time for an on-site staff to learn to use them.

Because of these learning curves and the expense of running large-scale networks, Applegate believes the industry is entering an era of resource sharing, as opposed to strict outsourcing. The economies of scale, he pointed out, will come from pooling capital and human resources and distributing the costs over many users, the way the public carriers do.

Comments?

See "How to reach us" on the back page.

RATE & TARIFF MONITOR

by Eric Paulak

AT&T back in the local market

Thought it was going to take the Republican Congress to allow AT&T back into the local telephone market?

Not so. AT&T was never barred from the local market. It was barred from buying back any of the Bell companies, not from starting up its own operations.

So with the complete opening of the Rochester, N.Y., market, AT&T is back offering local service for the first time in 11 years, and it's out to beat the competition.

A little background: Thanks to the deal that the New York Public Service Commission worked out with Rochester Telephone (now Frontier Corp.), the Rochester local phone market was opened to full competition on Jan. 1. So anyone who wants to offer local service just has to apply with the PSC, get approval and go to it.

In exchange, the PSC freed Rochester Tel from rate-of-return regulations and instead imposed price caps. Now the carrier is free to make as much money as it can squeeze out of the market and its workforce.

As a result, AT&T — along with another odd contender, Time Warner — is now offering local service to residential customers in Rochester and the surrounding areas. Here's how AT&T compares.

Currently, Rochester Tel offers both flat-rate and message-rate residential service. AT&T only offers flat-rate.

Rochester Tel breaks its pricing down based on nine groups. The least expensive flat-rate group — Group 2 — costs $6.23 a month, and the most expensive — Group 9 — costs $12.96 a month.

Currently, AT&T is offering only local resale. The carrier buys service in bulk from Rochester Tel and resells it to users. As a result, its tariff structure mirrors that of Rochester Tel in all aspects, except the price.

AT&T has tariffed its prices in rate bands. On the high end, AT&T can be as much as 88% more expensive than Rochester Tel. But on the low end — where AT&T says it will charge most users — the carrier is 5% less expensive.

So if you went with AT&T over Rochester Tel for your flat-rate residential service, you would save somewhere between $3.72 and $7.80 a year.

No big deal, right? Yes and no.

A couple of bucks is certainly no big deal, especially since we are talking about residential service and not business.

But AT&T entering the local market, no matter what portion of it, is a very big deal for several reasons.

First, even though MCI and Sprint have local operations, neither one has the marketing and advertising muscle of AT&T. Plus, MCI may have to compete against other carriers with its MCI Metro unit, but Sprint isn't competing with any other local carrier for its customers.

If the other local carriers in Rochester want to compete once AT&T's advertising budget kicks in, they're either going to have to offer exceptionally better service, or undercut AT&T's rates.

It's not very likely that the service Rochester Tel or Time Warner offers will be that much better, if any. So their best bet is to undercut AT&T's rates. That's the same strategy MCI and Sprint took against AT&T in the long-distance market.

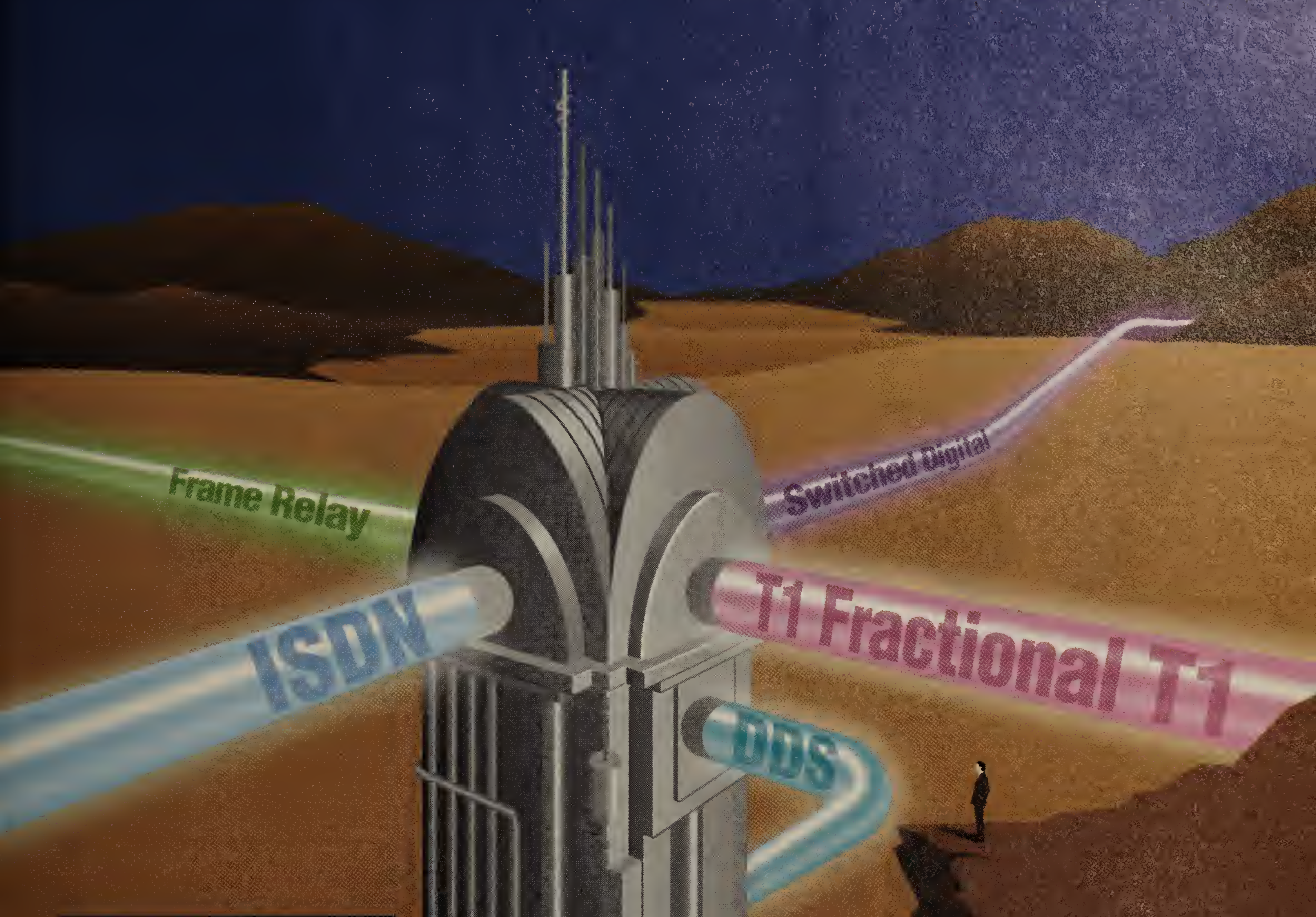
And, finally, even though AT&T is just offering residential resale, that is just a starting point. If the resale trial goes well, AT&T will install its own equipment and move on to the more lucrative business market.

The reason AT&T isn't starting with the business market to begin with is that it already has some established competition in Rochester, namely Metropolitan Fiber Systems and Teleport Communications Group, and would be at a disadvantage.

But once AT&T gets a foothold in the residential market, making the crossover will be easy and sure.

Paulak is associate publisher for the Center for Communications Management Information, a provider of rate and tariff information in Rockville, Md. He can be reached at (301) 816-8950, Ext. 327.

All Digital Roads Lead to Motorola



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CLIENT/SERVER APPLICATIONS

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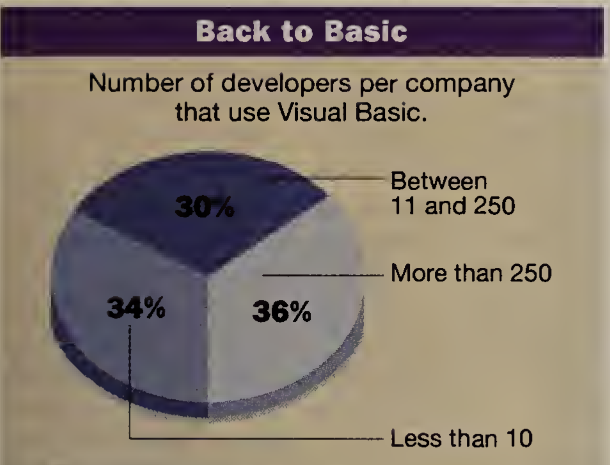


GRAPHIC BY TERRI MITCHELL

Progress and Cognos add Visual Basic support to their tools

BY ADAM GAFFIN

Bedford, Mass.

Users trying to build complex client/server applications with Microsoft Corp.'s Visual Basic are beginning to find relief from third-party vendors that promise easier access to back-end networked services.

Progress Software Corp. last week announced plans for a series of Visual Basic add-ons aimed at database access and team development. The tools, which will roll out over the next few months, are based partly on work by Crescent Software, Inc. of Ridgefield, Conn., which Progress last week bought for roughly $3 million.

See Visual Basic, *page 24*

Big Blue digs in on DBMSs to gain client/server control

Q&A

Last May, IBM rolled out a spate of new products aimed at the database downsizing market, including new versions of its DB2/2 and DB2/6000 databases, graphical application development tools and database management utilities. Since then, the company has boosted its database replication capabilities and support for parallel processing computers. Just last fall, IBM said it will let users replicate and manage non-IBM databases with IBM tools. The company is pushing hard to own a piece of the lucrative client/server market, but are its efforts working? *Network World* Editor in Chief John Gallant and Senior Writer Barb Cole recently got a status report from Steve Mills, general manager of IBM's software division.

How have customers responded to your database strategy?

People want to pigeonhole the IBM company. So our database push of 1994 surprised a lot of customers, consultants and members of the press both in terms of the speed with which we promised and delivered products and the cross-platform range of what we've done.

The biggest challenge we have is getting our technology in their hands so that their experience proves out the promise.

In 1994, you went after the database downsizing market aggressively. Will you continue in 1995 at the same pace?

Our goal is to become a full-fledged, end-to-end player in this frenzied downsizing market. We've rolled product out on a quarter-by-quarter basis, and that process will continue.

In 1995, we'll hit more hardware platforms, add more functions and boost the management tools of our database.

"There isn't anything that the other database companies are doing that we are not doing."

Steve Mills

Few people would question IBM's ability to manage data. But what distinguishes your database offerings from the others?

We have said that we will deal with your data from laptops all the way to multi-hundred-MIP systems. The largest databases out there are still DB2-based, and we expect that to continue.

Our specialty is 7-by-24-by-365 support. We don't think anybody in the industry can touch us in terms of that level of commitment to supporting customers. In terms of technology, it's no longer a question of filling in all the features on a function checklist. The surrounding database management environment is key, and I think we excel here.

We're also a leader in the workgroup applications space. Our calendar, address book, mail system and decision support tools are tightly linked to DB2. We're also strong in areas like statistical analysis, multidimensional analysis, storing images, voice and text.

We're going after new markets, too, like data mining.

In October, you announced plans to manage other databases such as Oracle7 and Sybase System 10 using DataHub. What other cross-database capabilities do you have planned for DataHub?

The DataHub family of products will continue to expand both in terms of the functional things that we do around database administration, especially in the performance tuning area, as well as touching more databases and platforms. We're taking the same approach with our replication strategy.

It's based on how many databases, how many platforms, how many data types can you replicate from and to.

What about the lack of native front-end tool support for DB2? Does that hinder your success in the client/server market?

See Big Blue, *page 24*

BRIEFS

Objectivity, Inc. of Mountain View, Calif., last week announced planned enhancements to its **object database management system.**

Version 3.5 of Objectivity/DB will have multiple threading to support concurrent connections; support for ParcPlace Systems, Inc.'s Smalltalk development language; as well as a link to Informix Software, Inc. databases. It also comes with support for a new set of C++ templates.

The software already supports Windows, Windows NT and Unix clients, as well as several Unix implementations. It also supports Digital Equipment Corp.'s OpenVMS as well as a SQL interface.

The product will ship by March. Pricing starts at $10,000 per user for a Unix developers' kit and $7,500 for a Windows or Windows NT kit, in addition to server pricing that ranges from $300 to $2,000 per user, depending on configuration.

Objectivity: (415) 254-7100.

Informix Software, Inc. will license technology from San Diego-based **Excalibur Technologies Corp.,** a maker of text and image retrieval systems. The Menlo Park, Calif., database maker will integrate Excalibur Text Retrieval Library and Excalibur Image and Signal server with its Informix On-Line Dynamic database, letting users store and retrieve text and multimedia information within those databases. Rivals Oracle Corp. and Sybase, Inc. already have announced media servers. Pricing and availability of the new Informix product will be announced later this year, the companies said.

Informix: (415) 926-6000; Excalibur: (619) 625-7900.

Oracle Corp. has begun shipping Cooperative Development Environment (CDE) 2, a suite of **application development tools,** computer-aided software engineering products, and query and reporting tools that work with the Oracle7 database. CDE2 adds support for Windows and has ties to transaction processing monitors. Pricing is $2,500 per module per developer and $175 for each run-time version.

Oracle: (415) 506-7000.

ON Technology Corp. of Cambridge, Mass., last week announced it has added TCP/IP support to its **calendaring and scheduling** application. Version 2.5 of Meeting Maker XP also includes the ability to run as a NetWare Loadable Module in Novell, Inc.'s NetWare networks. ON Technology said the new TCP/IP support includes stacks from Microsoft Corp., The Wollongong Group, Inc., NetManage, Inc. and FTP Software, Inc. Meeting Maker supports Windows, Macintosh and DOS clients. Pricing starts at $790 for a 10-user license.

ON Technology: (800) 767-6683.

GROUPWARE

Putting Notes on the 'Net

BY ADAM GAFFIN

Cambridge, Mass.

Lotus Development Corp. and other vendors will unleash a host of tools next week aimed at connecting Lotus Notes servers and users with the Internet.

The products will be announced at Lotusphere, Lotus' annual conference for Notes and cc:Mail developers and users, which starts Jan. 23 in Orlando, Fla.

Lotus is expected to unveil pieces of its InterNotes strategy, which ultimately will include a variety of tools for giving Notes users direct access to the Internet and Internet users direct access to Notes databases.

One of the first components of that strategy will be Web Link software, licensed from Corporate Software, Inc., that will let users convert Notes databases into comparable World-Wide Web databases.

David Gonzales, sales manager for Corporate Software's Integration Services division, said the Windows NT-based software will convert Notes hyperlinks (called doclinks) into comparable Web links and will convert Notes graphics into GIF images for Web use.

The software relies on schedules set by the user for updating Web databases and can perform incremental updates rather than re-creating an entire Notes database each time, Gonzales said.

Lotus has yet to announce pricing or availability.

Separately, Corporate Software will announce plans for a Windows version of Web Link. In addition, the company will showcase software that will let Web users interact directly with Notes databases — something the Lotus version will not allow.

The Corporate Software applications are set to ship by the second quarter, he said, adding that the price has yet to be determined.

See Notes, *page 24*

Firms to bolster financial apps lines

New PeopleSoft software targets logistics and material mgmt.

BY ADAM GAFFIN

Walnut Creek, Calif.

PeopleSoft, Inc. last week said it will roll out new modules and enhancements for its line of financial and management software over the coming year.

Meanwhile, rival SQL Financials, Inc. is planning a set of enhancements for its own line of applications.

Both companies offer applications that rely on a client/server architecture for storing, processing and managing corporate information.

PeopleSoft said a new Distribution set of modules will focus on logistics and material management.

General availability for the entire package is expected in the second half of the year; purchasing and inventory applications are now available.

The company's Financials module, meanwhile, will be beefed up with project-costing and billing applications. The project-costing application will let users do everything from managing capital projects to calculating revenue for projects, while the billing application will include a repository for storing enterprise billing information.

PeopleSoft said it has added support for Informix, Inc. databases to all its applications and expects to add support for DB/2 for AIX and HP-UX by midyear. The software already supports DB/2 for MVS and Oracle Corp. databases, as well as Gupta Corp.'s SQLBase. On the client side, it supports Windows.

Pricing for all the modules starts at around $100,000 per site license.

Separately, SQL Financials, based in Atlanta, expects to ship a new Revenue Accounting module by the end of the month. The company also plans to add support for Microsoft Corp.'s OLE 2.0 by mid-1995. SQL Financials offers a line of client/server financial applications that supports Windows clients and back-end databases from Gupta, Microsoft, Oracle and Sybase, Inc.

Pricing for SQL Financials modules starts around $60,000 per site.

☎PeopleSoft: (510) 946-9460; SQL Financials: (404) 390-3970.

Big Blue

Continued from page 23

Several vendors, including Powersoft [Corp.], SAP [AG] and PeopleSoft [Inc.], will be making announcements shortly about their [native] support for DB2. This is part of an ongoing effort to get broader support, and it takes time. But I will never give up until everything that moves in the industry works with DB2.

Where are your biggest opportunities to steal market share from companies like Oracle and Sybase?

There are endless horror stories about relational databases becoming corrupt and having weak recovery facilities. We build a robust, high-integrity product. We say to potential customers, 'Let's look at what it's like to manage data in a real-life environment and whether or not your recovery facilities are adequate, whether you experience data corruption or don't.' That's one way we're going after the marketplace. ▣

Notes

Continued from page 23

At Lotusphere, Lotus also will announce InterNotes News Gateway, software that will translate between Usenet and Notes message formats.

Jay Batson, an analyst with Forrester Research, Inc., a Cambridge, Mass., market research firm, said these products represent the beginning of what users can expect from Lotus for connecting Notes to the Internet. "I wouldn't underestimate Lotus' desire to profit from the 'Net," he said.

Also at the conference, Wolf Communications Co. of Houston will announce a service, dubbed NetFusion, that will let Notes users create Web servers.

Wolf runs WorldCom, a communications hub through which Notes users can already participate in Usenet conferences and exchange electronic mail with the Internet.

☎Corporate Software: (703) 522-0820; Lotus: (617) 577-8500; Wolf: (713) 650-6522.

Visual Basic

Continued from page 23

Separately, Cognos, Inc., of Burlington, Mass., said it will add programming controls for Visual Basic — VBXs — and Microsoft's OLE — OCXs — to its Axiant client/server tool kit.

PROGRESSING NICELY

Progress' new Crescent division will release a tool, dubbed EnQuiry, that brings a point-and-click interface to building SQL queries for back-end relational databases. The tool is due in the second quarter.

David Headley, senior software engineer for electronic imaging systems at Polaroid Corp. in Cambridge, Mass., is looking forward to trying out EnQuiry because it promises a significant reduction in the amount of work needed to tie Visual Basic clients to database servers.

Polaroid currently uses Visual Basic to develop both prototypes and client front ends for its imaging applications. The problem is that programmers really need to know SQL to write the lengthy chunks of code required to generate queries and forms, he said.

Donald DePalma, senior analyst in the software strategies service at Forrester Research, Inc., a Cambridge, Mass., market research firm, said growing numbers of companies are looking to use Visual Basic to develop complex applications for which it was not really designed.

"It's astounding what people are trying to do with Visual Basic," he said. But with Windows becoming the dominant desktop operating system for both end users and developers, the Windows-based programming tool has become a standard part of many developers' tool kits, even if it was never designed for client/server development, he added.

In addition to EnQuiry, Progress said it would deliver a set of tools, dubbed PowerPak Pro, aimed at helping teams of developers coordinate their Visual Basic work. The company also plans to release a product code-named Stingray in the second half of this year that will convert Visual Basic code into C or C++ for improved operation.

Pricing for the new Progress products was not announced.

The ubiquity of Visual Basic is a major reason Cognos will add VBX and OCX support to the next major release of Axiant, due out in the second half of this year, said Neal Hill, vice president of corporate marketing at Cognos. Version 2.0 will let developers use the growing number of third-party programming components for Visual Basic, he said.

☎Progress: (617) 280-4000; Cognos: (617) 229-6600.

SHARED LOGIC

by Marc Myers

'Hello. I'd like to purchase an RS/6000...'

I recently had the chance to take a real-world look at what it takes to purchase a high-end client/server system from the company that still brings to mind room-size mainframe computers and starched, white shirts. A client that prefers to use IBM products whenever possible recently asked me to design and purchase a client/server system for 75 end users.

So began my journey.

The first challenge, of course, was finding IBM. You would think the computer giant would be relatively easy to locate, but within the past 10 years, I've spent many hours going around in circles trying to contact the right person at IBM to address my particular concern.

I placed my first call to the only IBM number I have memorized: (800) IBM-2YOU, which is the number for IBM PC Direct. I figured someone there would be able to direct me to the right department.

Well, I got off to a bad start when the first rep I spoke with had never heard of the RISC System/6000 line. But within a few minutes, I had a new 800 number, (800) 426-2255, specifically for RISC systems sales. I recommend you avoid this number.

I expected to be placed on hold in a linear queue, but the RISC unit's 800 lines put you in a circular queue that actually plops you right back to square one if you wait for more than five minutes.

"All RS/6000 agents are helping other customers. Your call will be answered in the order received" is what the voice response unit said.

What it meant to say was that "All RS/6000 agents are in Bermuda. Your call will be answered in complete random order."

So I took a new tack and simply called 800 information and asked for IBM sales — this was what I should have done in the first place. That number, (800) 426-4968, connected me directly to an agent who transferred me to a local sales unit.

Within five minutes of my first call, I had a friendly and helpful local contact person, and literature was on its way to my office.

The RS/6000 line includes some serious new models. I was particularly impressed with the entry-level multiprocessor Model G30. It comes standard with a dual-processor Power PC 601 card that can be expanded to four processors.

To support my client's 75 users, I requested a quote for an 8G-byte G30 system with 128M bytes of memory, a CD-ROM, internal tape backup, a color display and a network adapter. The quote was close to $60,000, which seemed reasonable for the amount of horsepower provided. This also included a one-year warranty.

IBM knows how to sell mainframes and how to sell servers. The new PowerPC-based RS/6000s are very appealing, and my sales rep understood the machine thoroughly. But when I told her that I needed to connect 75 Windows-based workstations to them, there was a long, studied silence on the other end of the line.

"So the workstations won't be running X Windows?" she asked.

"Nope. Microsoft Windows," I replied.

At this point, my sales rep suggested that I speak with IBM Professional Services. I agreed, but it took almost two weeks for this organization to contact me. In the meantime, I explored the problem and found that there are a number of ways to connect the PCs to the new RS/6000s, each with pros and cons.

The best solution I found was to run TCP/IP on the clients with Network File System for file sharing. FTP Software, Inc. sells an efficient TCP/IP stack for Windows clients that fits the bill.

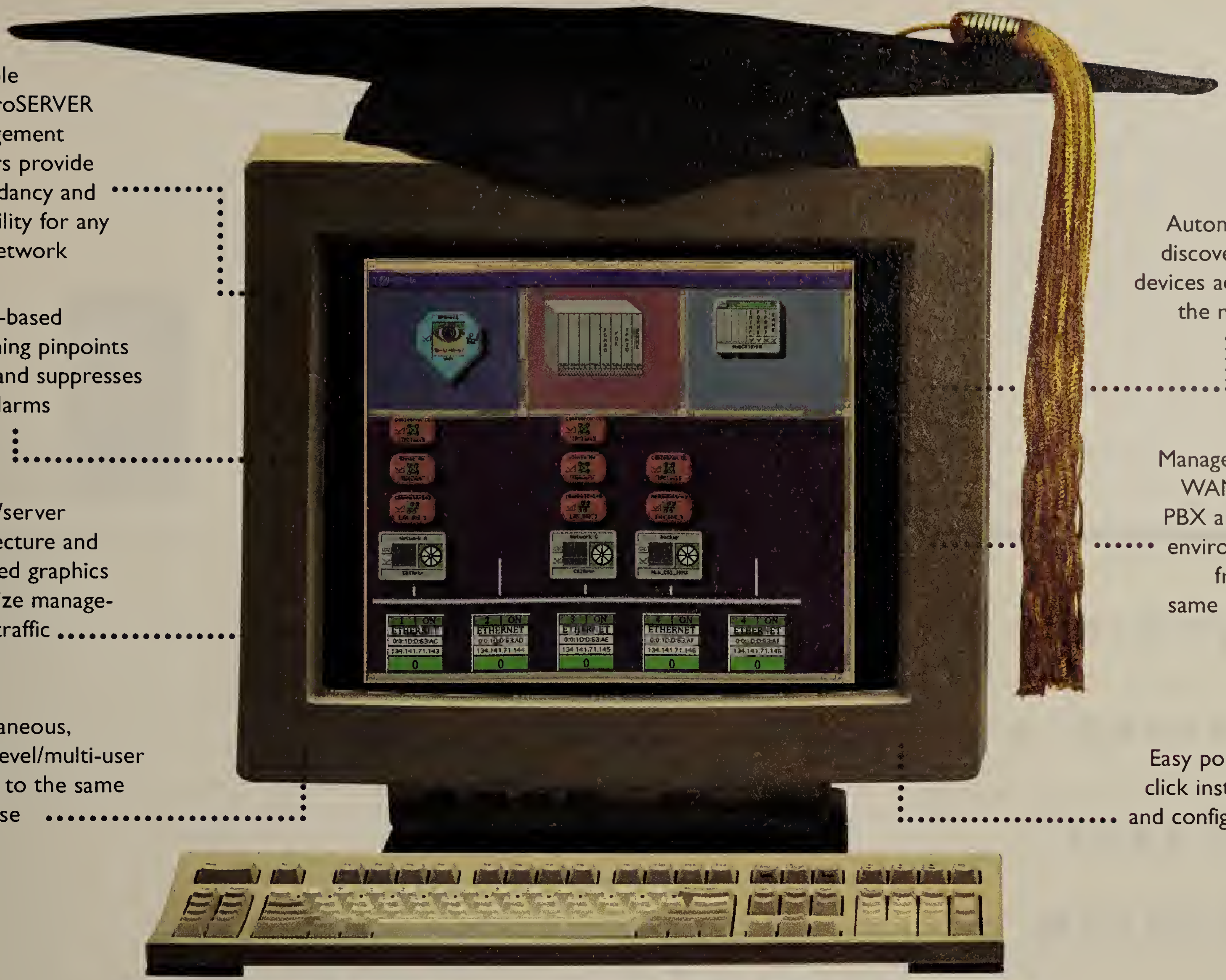
As a matter of fact, IBM remarkets FTP's product, calling it PC TCP/IP. The solution is simple and efficient — if only IBM could have helped me from the start.

IBM's Client/Server Computing Group reportedly has put together more than 100 client/server templates, documenting successful real-world installations.

This is a great idea, but it does not appear that these templates are readily available to the product specialists who deal directly with customers. If those templates had been in the hands of my rep, she probably could have saved me two days of research.

Client/server systems are rarely, if ever, single-vendor systems. The technology is by definition multivendor. When IBM makes it easier to integrate its excellent hardware with the software that most people want to use — namely Windows — IBM's ability to serve client/server customers will be dramatically enhanced.

➺ Myers is president of Client/Server Connection, Ltd., a Cambridge, Mass., firm specializing in client/server software solutions. He can be reached at (800) 622-1108, Ext. 522, or via CompuServe at 71332,1726. Myers' column alternates in this space with that of META Group's Mike Rothman.



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EDITORIAL INSIGHTS

Was this the right answer?

Ellen Hancock has been embroiled in the fight of her life – the battle to maintain IBM's control over corporate networks.

With the erosion of traditional network architectures, such as SNA, and the ascendancy of client/server computing, Hancock and her colleagues have fought to maintain some share of IBM's preeminence in networking. Now that fight belongs to someone else.

IBM's top-ranking network official and one of the industry's highest profile woman executives, Hancock has fallen victim to CEO Lou Gerstner's impatience. She is leaving as a result of a reorganization designed, among other things, to speed the pace of change in the software and network groups she oversaw.

Hancock has been cited as a candidate for CEO positions of her own in the network industry. (Her name, for example, came up during Novell's search for Ray Noorda's successor.) Her reversal of fortune – she was named to Gerstner's elite Corporate Executive Committee only last year – is testament to the pressure for results under IBM's new CEO.

So the appropriate question as Hancock departs is: Will her successors – John Thompson, who will head a new software group, and Nick Donofrio, who will lead a new server group that includes Networking Hardware – get the results Gerstner wants?

That depends on IBM's willingness to focus. IBM continues to offer a bewildering array of network solutions that are often at odds with one another. Case in point: network management. As our special feature this week shows, IBM offers more than 100 management products, and customers have a hard time figuring out what's right for them (see page 31).

IBM has to narrow its many messages. It has long talked about becoming a leader in open computing and pitches its OSI and TCP/IP products at the same time it continues to push customers to SNA – which is still perceived as a closed solution. IBM has established so many architectures in so many areas that most customers, confused by what's real and what's slideware, have stopped listening.

IBM's challenge is to establish a clearer net direction and streamline its product line. It needs to put a stake in the ground – such as becoming a leader in ATM networking – and sacrifice some initiatives so others may succeed.

And that's the rub: making tough choices while maximizing quarterly profits for the Wall Street community. Hancock's departure doesn't make that job any easier for IBM. It will be interesting to see how she uses her inside knowledge in her next networking venture.

JOHN GALLANT jgallant@world.std.com

TELETOONS

FRANK AND TROISE

Well, I already broke my New Year's resolution... I just flamed somebody online.
Phil Frank

DISTRIBUTED COMPUTING

by John R. Rymer

DCE users, take heart: Objects can be in your future

Users planning on making the Open Software Foundation, Inc.'s (OSF) Distributed Computing Environment (DCE) the centerpiece of their next-generation network architectures should be heartened by the Object Management Group's (OMG) new interoperability standard.

DCE plays a role in the standard, known as Common Object Request Broker Architecture (CORBA) 2.0, and it appears Hewlett-Packard Co., Digital Equipment Corp., IBM and Microsoft Corp. will see that DCE strongly supports multivendor distributed object computing applications.

The OMG's first standard, CORBA 1.X, defines an interface that allows an object on a client to ask an object on a server to perform an operation for it. CORBA 1.X allows objects to interact using high-level messages, a powerful mechanism for distributed applications.

In CORBA 1.X, a network service called an object request broker (ORB) facilitates conversations between client and server objects. Server objects make themselves accessible to client objects by registering with an ORB – that is, telling it which operations they support. CORBA is defined loosely enough to give vendors great latitude in building ORBs and in implementing the client-side interface. As a result, all of the implementations are different enough to make them incompatible. Thus, as a practical matter, CORBA client objects can access ORBs from only one vendor.

With every major platform vendor either shipping an ORB today or planning to do so in the near future, users faced an untenable situation. Client objects would be locked into using a single vendor's ORB – unless the OMG designed a way for ORBs to interoperate. Interoperability is accomplished by allowing one ORB to forward object requests to other ORBs for action. Such a mechanism would let vendors continue building their own ORBs in ways that give them competitive advantage while allowing for multivendor distributed object networks.

In designing its interoperability standard, the OMG had two alternatives. The first was to use the DCE's remote procedure call (RPC) as a standard protocol for object request forwarding. The second was to use a new, neutral protocol. The OMG decided to allow for both, with the new protocol called the Internet Inter-ORB Protocol (IIOP) being a common denominator available in all CORBA 2.0 ORBs, and DCE being available as a special environment-specific option.

The DCE-based CORBA 2.0 solution was proposed by HP and Digital, with support from IBM and Microsoft. In crafting the proposal, these vendors created a standard format for using the DCE's RPC for distributed object computing applications.

This alone was an important agreement among the DCE powers. Previously, each of the DCE vendors was free to implement distributed objects on DCE in its own way. If they continued with that course of action, the result would have been incompatible solutions.

But the inclusion of DCE in CORBA 2.0 has larger implications. ORB interoperability requires a communications protocol for message forwarding. But it also helps to have agreement on how object names and security are managed. IIOP leaves these issues largely unaddressed. DCE proponents do, as well, mainly for political reasons.

However, now that the CORBA 2.0 selection process is complete, the DCE camp can try to reach agreement on how its Cell Directory Service, which handles object naming, and its Security Service, which specifies a security mechanism, will be used to further support ORB interoperability. The vendors involved reportedly are well along in these discussions.

The result for DCE users will be a strong distributed object computing solution. DCE vendors will offer a common protocol for use in inter-ORB communications *and* common object naming and security mechanisms.

If the vendors hustle, they'll be able to get to market soon with a strong solution .

The DCE camp's position has also been strengthened recently by Microsoft's entry into the picture. Microsoft uses DCE as its client-to-ORB object protocol. The company also argued in favor of using DCE as the ORB interoperability protocol. Microsoft clearly plans to base its distributed object technology – which extends OLE – on the DCE's RPC. The vendor also has said it will use the same base technology as DCE for its distributed security services in future versions of Windows NT.

Microsoft's position raises the possibility that users could employ DCE as a common protocol throughout a distributed object installation. Objects running on Windows clients would use the same underlying messaging protocol (the DCE's RPC) employed by ORBs interacting to satisfy client requests.

Moreover, if Microsoft's security service is compatible with the DCE's, interoperability will be further improved.

The big question is whether Microsoft will use DCE's Cell Directory Service. That's not clear yet. But if Microsoft does use it then a uniform set of DCE services to support distributed object computing applications is assured.

The DCE camp used the CORBA 2.0 process to help establish DCE as the basis for multivendor distributed computing. Establishing DCE in the new world of distributed objects was their goal.

These vendors are now operating more or less as a united front.

It's been a difficult two years for DCE proponents. The OSF was downsized. DCE's momentum in the market was disappointing. New technologies, such as distributed objects, seemed to challenge the very idea of DCE.

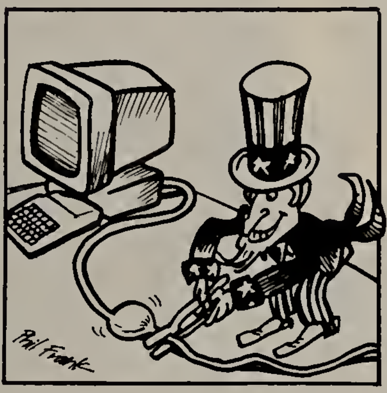
DCE users should take heart from the CORBA 2.0 outcome. Some DCE users complained during the CORBA 2.0 process that the OMG was turning its back on their needs, but the OMG didn't. DCE is very much in the CORBA 2.0 picture.

Rymer is editor in chief of "Distributed Computing Monitor," a monthly report published by Patricia Seybold Group, Inc. of Boston. He can be reached at (617) 742-5200 or via the Internet at jrymer@psgroup.com.

SECURITY ISSUES

by Bruce Schneier

Electronic speech — for domestic use only



The U.S. State Department recently ruled that some forms of electronic speech are not protected by the First Amendment and can be prohibited from export. This decision raises questions about freedom of speech on the information superhighway. As business communications continue to migrate from paper mail to electronic mail, these questions will become more important. It is vital that laws address this new form of speech.

Last year, I wrote a book called *Applied Cryptography* (John Wiley & Sons, 1994), which explains cryptography in nonmathematical language. It describes how to build cryptography into products, illustrates cryptographic techniques, and evaluates algorithms and makes recommendations on their quality. It even includes source-code listings that enable readers to implement many of the algorithms and techniques described.

I applied to the State Department for export approval for the book, and it was granted. (The State Department wouldn't dare refuse — the book is a publication, protected as free speech under the Constitution.) Then, I applied for export approval for a source-code disk. This electronic disk contained, line for line, the same source code listed in the book. There was no new information on the disk. The source code was not ready to run; it had to be tailored to a particular computer and then compiled. It was not a product — it was no more than pages of the book in machine-readable form.

The State Department ruled that electronic source code for computer programs containing cryptographic algorithms is not protected under the First Amendment and thus is not exportable under current law. Under State Department rules, the export of almost all software with confidentiality and privacy features is prohibited unless permission is granted by the National Security Agency prior to export.

William Robinson, director of the Office of Defense Trade Controls, wrote the ruling, stating "the text files on the subject disk are not an exact representation of what is found in *Applied Cryptography*...each source-code listing has been partitioned into its own file and has the capability of being easily compiled into an executable subroutine...This is an added value to any end user that wishes to incorporate encryption into a product."

From every angle, this ruling is absurd. Does the State Department really see a difference between cryptography source code on a printed page and cryptography source code on a computer disk? Does it seriously believe that no foreigner would ever consider retyping the printed code into a computer or that scanners are not available for sale outside the U.S.? Does it really contend that it is not the information that is important, but its form?

The Clipper Chip and the proposed Cantwell Bill (H.R. 3627), which would relax export controls over some forms of private-sector cryptography, brought the export of cryptography into the news, but this ruling has implications far beyond that. In effect, it says what you type into your computer isn't protected by the First Amendment until you print it; what you send via E-mail isn't protected unless you save a paper copy of it. It is only a matter of time before the courts recognize the lunacy of this ruling, but until then, users would be well advised to rely on the protection of paper.

➻ Schneier is president of Counterpane Systems, a cryptography and computer-security consulting firm in Oak Park, Ill. He can be reached at schneier@chinet.com.

Visual advantages

Regarding Marc Myers' column about IBM's Visual Age application development software (Dec. 5, 1994, page 36):

I've been following IBM's Visual Age product for a while, and it seems to have gotten mostly rave reviews, Myers' included.

Myers particularly likes Visual Age for its ability to make use of pieces of existing applications in various ways. If that was not an issue, does he still think it has distinct advantages over its competitors? Does it offer any extensibility like Microsoft Corp.'s Visual Basic and Borland International, Inc.'s Delphi do?

Don Berliner
Senior vice president, MIS
Kenmar Advisory Corp.
New York

Myers' response: Yes, Visual Age does have additional advantages over tools such as Visual Basic. In particular, it offers both source code management and source reusability features that Visual Basic lacks. Much of this is attained through Visual Age's use of a parts paradigm, where reusable components can easily be created and saved. Other developers can check parts out of the managed repository.

On the other hand, Visual Basic is an ideal tool for small-scale development projects. It is easy to use and has an abundance of third-party add-ons. It produces solid programs and is a well-known technology for which support is easily found. But it is not appropriate for a large-scale corporate development environment because of its lack of code management and code reuse features.

Experience is best

I just wanted to thank Ben Rothke for his article about the Novell, Inc. Certified NetWare Engineer (CNE) program and its surprising lack of benefits (Dec. 12, 1994, page 51). I have been debating whether to get a

See In-box, *page* 37

Time to grow up

In reference to John Doe's column relating his bad experience with advertising on the 'Net (Dec. 5, 1994, page 41):

I think this points out the dilemma that the honest Internet user faces these days. The Internet originated as a wild, uncontrolled net where, in some sense, almost anything could be posted.

However, in another sense, there were unwritten rules used to keep a certain control of the network.

Now the electronic communication world is rapidly changing and so is the Internet.

However, those old roots run deep, and many users obviously intend to defy any changes that they do not like or approve of. Maybe the Internet is changing too fast, but only in the sense that those cyberpsychos are not willing to give up the control they have.

I know the Internet will become commercialized; it's inevitable, and there will be some difficult growing pains as this happens.

Some businesses abuse the system and perhaps deserve some sort of retaliation, but it's important to remember that the Internet can now be accessed by everyone from honest business people to children seeking information stored in far-flung locations. The Internet is growing, and now it's time for all of those cyberpsychos to grow up or get off the 'Net.

Richard Keith
Member
Bowling Green Area
MS-DOS User's Group
Bowling Green, Ky.

Learn netiquette

Regarding the column "Ad leads to nightmare on Cyber-Street" by John Doe:

> I don't know what groups the author was referring to in the statement "yet in those groups, there was nothing *but* advertisements."

None of the groups I read have advertisements, and when occasionally some lawyer or other misguided person places an ad, the same sort of thing happens to them that happened to Doe.

It is sad that so many people won't take the time to learn about netiquette before jumping into something like advertising on the Internet.

For those people, perhaps Pavlovian conditioning is the only alternative to education.

Lew Hartswick
Co-supervisor
Chemistry department
Electronics Facility

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Feature

VENDOR *snapshot*

IBM plots break with history

Vendor carefully crafts object-based net management strategy to avoid miscues brought on by stalled SystemView and other grandiose schemes.

By Michael Cooney

Conventional wisdom says history repeats itself. But if the architects and business managers who guide IBM's network management strategy have their way, the vendor will soon break from past mistakes it made with other grandiose technology plans — such as SystemView — that either fizzled or outright flopped.

By some accounts, IBM is headed down the right network management path with Karat, its next-generation network management product that hinges so heavily on object-oriented technology.

"Users and competing vendors will be surprised at how far along IBM is with its object development," says Frank Dzubeck, president of the Communications Network Architects, Inc., a consultancy in Washington, D.C. "A lot of product should make its way out the door in 1995."

If IBM can deliver, it may be the vendor best positioned to provide true enterprise class network management — from the mainframe down through departmental LANs.

"The scope of what we are able to manage and the coverage of our product line are our greatest strengths," says Bill Warner, vice president of IBM's Enterprise Management division. "We can manage more devices and systems than anybody in the industry. We can cover mainframes, PCs and workstations, as well as databases, storage, LAN interconnection and mid-range computers — whether it is IBM equipment or not."

License to squeal

Market research firms estimate IBM has more than 25,000 NetView licenses installed.

IBM, though, must negotiate some hurdles in its quest to succeed in the network management race. Warner's Enterprise Management division, which develops and sells the NetView family of products, is in a period of transition. The group is desperately trying to appease its installed base — a collection of customers who complain that IBM's network management product line is far too populated with product, making it confusing. In addition to those user concerns, IBM is trying to convert customers to the object-oriented technology that will be at the heart of a new set of products.

"Conversion of legacy systems to more advanced technology is costly, risky and time-consuming," says Linda Mainord, president of the IBM large user group Guide International, Inc. "We hope that the emerging object-oriented application development environment will make this transition easier and help rid the applications backlog that exists today."

Guide members say they need better systems and network management tools to gain a better handle on activity within their enterprise nets. "If users can't effectively monitor their networks, then they can't manage them, and if they can't manage them, they can't service them, and that means problems just keep getting worse," says Mike Tomlianovich, a member of Guide's senior management team. "More effective management tools for multivendor net and systems management are the things we need most from IBM now."

What users apparently are asking for is nothing short of a revolution in net management products. IBM's current net management strategy, however, hasn't changed much in the past few years. The company continues to recommend that users tap host-based NetView to manage traditional Systems Network Architecture nets and NetView for AIX for distributed multivendor net management. In fact, because of the increased sale of mainframes this year, IBM executives say NetView sales are up too, although they decline to give exact sales figures. Market research firms say IBM has more than 25,000 NetView licenses installed.

IBM deserves credit, however, for at least not being complacent with NetView. The company has continued to improve NetView by adding new automation features and improved LAN management capabilities. For example, IBM last year shipped a new version of its NetView Multisystem Manager/MVS, which runs on top of NetView and gathers topology and status data from SNA, TCP/IP, IBM LAN Network Manager or Novell, Inc. NetWare LANs. Another new application, Advanced Peer-to-Peer Networking Topology and Accounting Manager, automatically discovers end nodes and links in an APPN net and brings them under the supervision of NetView. Both applications then build objects representing those resources for storage in IBM's object-oriented database, Resource Object Data Manager (RODM).

Shipped with the host-based NetView Version 2 Release 3 in 1993, RODM is an object-oriented database designed for the storage and retrieval of network status and control information. Once captured in RODM, data is displayed and automatically updated on the Graphics Monitor Facility (GMF), NetView's color graphics monitor. If a failure occurs, the status monitor turns red. Operators can then click on the object to determine the extent of the problem.

One of the initial weaknesses of RODM was the tedious task of building objects in the database. IBM has solved that problem by kicking out another product called Multisystem Manager (MSM), which facilitates the automatic population of RODM. MSM runs on top of NetView and automatically gathers topology and status data from any TCP/IP, SNA, IBM LAN Network Manager or Novell NetWare LAN and stores them in object form within RODM.

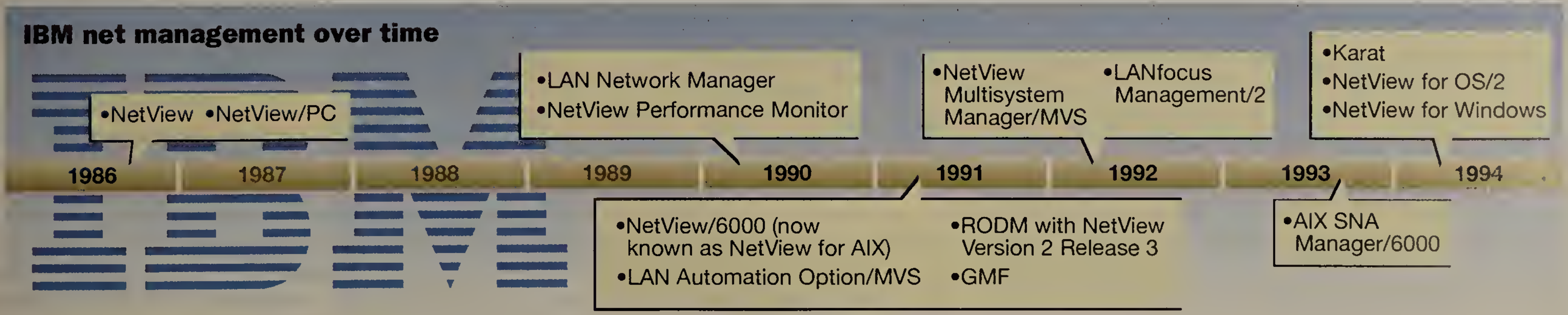
The tandem of MSM and NetView enables users to centrally manage their enterprise LANs from RODM and GMF. Users, for example, can define and group LAN segments, bridges or Token-Ring adapter cards. Users also can define "exception only" views of their nets so that GMF only shows operators failed objects.

IBM still has a number of future enhancements on the drawing board for RODM. It has promised to spawn applications that automatically find and build objects from multiplexers and other non-SNA devices. The next step is to utilize the objects in RODM with some of IBM's network automation products, such as Automated Operations Control or Automated Operations Network/MVS, which let users automate responses to network problems like link failures. IBM hasn't offered a time frame for when such integration might be available.

While IBM continues to bolster NetView, the only true alternative, Solve:Net/Master from Sterling Soft-

Continued on page 32

IBM net management over time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1993
1994
•NetView/6000 (now known as NetView for AIX)
•LAN Automation Option/MVS
•RODM with NetView Version 2 Release 3
•GMF
•AIX SNA Manager/6000

Continued from page 31

ware, Inc., continues to struggle. Sterling this year offered NetView users a 30% discount if they switch to Net/Master. Analysts said Sterling picked up a couple of new accounts but didn't put a ding in the more than 2-to-1 sales advantage NetView holds.

While host-based NetView still reigns at many traditional SNA sites, IBM is placing an increasingly heavy emphasis on its NetView for AIX (formerly known as NetView/6000) to manage enterprise environments. The platform still faces a number of hurdles before it can manage large legacy nets that support whole enterprises, analysts say. The biggest issue is scalability. IBM executives say NetView for AIX can manage as many as 30,000 objects today but should support nets with more than two or three million objects. IBM hasn't said when such a platform will exist.

IBM did fix some of the platform's other problems in 1994 with NetView for AIX Version 3.1. The upgrade supports a manager takeover facility that lets one NetView for AIX console take over for another in the event of a failure. It also lets the platform discover additional devices, such as bridges and routers.

Version 3.1 also supports databases from Oracle Corp., Informix Software, Inc. and Sybase, Inc. — in effect allowing them to serve as a repository for management data. Until now, the platform only supported an Ingres database.

"IBM had to expand the database options for NetView because the existing database was too slow and didn't scale up well," says Jill Huntington-Lee, an analyst with the Brandywine Networks Associates in Cinnaminson, N.J.

While NetView for AIX is slowly becoming a grown-up enterprise management platform, it has had some growing pains. IBM's NetView for AIX platform is based on Hewlett-Packard Co.'s HP OpenView technology, and until last April, the companies worked together to enhance the product. But no longer.

TROUBLE IN PARADISE

In April, IBM said it would not license HP OpenView 4.0; IBM said its AIX for NetView already was much more advanced than OpenView 4.0. A variety of market research firms claim HP has an installed base of more than 45,000 copies of OpenView — most of which are Windows-based — and IBM has about 2,000 NetView for AIX platforms.

IBM claims it is ahead of not only HP, but also other vendors in areas of distributed intelligence, object definition, storage options and standards compliance.

IBM and HP are now taking their platforms in different directions, creating concern among developers that now must decide which platform to target for new applications. The bottom line is that the applications developed for both platforms will not share information as easily as they might have in the past.

On the positive side, vendors such as Digital Equipment Corp. have standardized on the NetView for AIX platform, and other vendors are expected to follow suit. HP also has its own set of followers, namely AT&T and some other large carriers.

While both NetView and NetView for AIX have enjoyed success at managing multiple domains, IBM has struggled to find the right approach to manage departmental LANs. Last year, it rolled out NetView for Windows, a Simple Network Management Protocol-based alternative to a full-blown NetView for AIX platform, that lets users manage hubs, bridges, routers and local switches from a Windows workstation. Analysts said the platform is designed to compete most directly with HP's OpenView for Windows and Novell's NetWare Management System. The key difference for the IBM platform is that it comes with an integrated trouble-ticket application that the other platforms don't have.

IBM also announced NetView for

IBM's 1994 net management activity

Product	Description	Availability/Pricing
Karat	Next generation of SystemView designed to integrate IBM's disparate management platforms and applications inside an object-oriented framework.	1995/Unavailable
DMI	Developed DMI standards-based agents designed to report a variety of desktop component management data to a central net management platform.	Now/Unavailable
Enterprise Integrated Server (Being beta-tested. Not officially announced).	Designed to gather and report status and other systems management information on groups of servers.	Unavailable/ Unavailable
NetView for OS/2	Management platform for OS/2 workgroups.	Unavailable/ Unavailable
NetView for Windows	LAN management platform for Windows workgroups.	Now/$1,895
NetView for AIX Version 3.1	Added features such as ability to let multiple NetView for AIX managers share data.	Now/$16,500
MSM Version 2	Added support for TCP/IP LAN and SNA devices.	Now/Unavailable
APPN Topology and Accounting Manager	Automatically gathers APPN net information and reports to NetView.	Now as a feature for NetView Version 2 Release 4 users only/Starts at $5,810
NTuneMON and NTuneNCP	Lets users tune SNA nets on the fly.	Now/Monthly licensing fees from $125 to $570

Network World *Senior Editor Michael Cooney recently chatted with Bill Warner, IBM's vice president of enterprise management, about setting priorities for meeting users net management needs in 1995.*

WARNER

IBM has so many network and systems management platforms — from NetView/390 and NetView for AIX to NetFinity and now Karat — that many users are confused as to which products to choose. Is IBM trying to simplify this menu of choices in any way? And, if so, how?

Our Karat initiative is really targeted at simplifying our product line. We have over 100 products that run the full gamut of network and systems management, and customers are telling us that it's hard to know which products to use. Karat is the way we will simplify and clarify which suite of products users should employ. It will do this by providing a single point of control over a multitude of new and existing management applications and platforms.

It's still up to users to decide what they want to manage and which operating system they want to manage from, but in the future we will make that choice easier than we have in the past.

What happens to all of the existing IBM management applications in the Karat world?

All of our existing applications, from [Resource Access Control Facility, or RACF] to NetView, will work unchanged in the Karat environment. They will not need to be rewritten to work in the object-oriented world because we'll enable the object world to coexist with the legacy world. All new mainframe or PC applications will be object-based.

What criteria does IBM use to recommend one platform over another?

If the customer has a large mainframe shop and has NetView, [Operations Planning and Control] and other host-based software, as well as the skilled and trained people to run it, we recommend they keep that infrastructure in place. We will continue to give users the tools they need to manage the hierarchical network as well as the distributed LAN environments they are likely encountering. It doesn't make much sense to us to form a separate IS department to run and manage the LANs, but some users do.

For users who don't have mainframes, we recommend they centralize management on a different platform because centralized management brings the fastest return on the software investment needed to manage the distributed LAN environment.

How is the research and development money within the enterprise management group spread out?

Our investment dollars in systems and network management products are equally spread over mainframe and PC-based software development. That means there is still a considerable investment in mainframe-based software. In fact, it is the major business producer with our group. The growth potential lies outside that area, though, and that's why we are investing heavily [in developing PC-based software], as well.

What are your net and systems management priorities for 1995?

We have two priorities for 1995. The delivery of Karat is the No. 1 priority. After that, we are going to work on enhancing the quality of our sales and service forces so that they can better support users. We plan to increase the number of people out in the field supporting our management products.

The demand for network and systems management help in the user community is growing, and that's not just IBM; its industrywide. Management involves a complex set of issues, and we will have more people out there to help users deal with their problems better.

Users' *wish list for IBM net mgmt.*

☑ *"As we roll out and deploy distributed systems, we need the tools to track resources and monitor storage devices, application code, data and network availability across the enterprise. It's a tall order but one that needs to be done if users' operations are to be successful."*
David Thewlis, director for the IBM user group Share, Inc. and network manager with Kaiser Permanente in Eureka, Calif.

☑ *"What we are looking for is improved reporting of network performance. We'd also like better data traffic modeling tools so that we could predict where it is we'll need increased bandwidth.*
David Ellis, director of network services for The Home Depot, Inc. in Atlanta

☑ *"What we need is a NetView application that can monitor the frame relay net to see what data is flowing where. Frame relay isn't as tolerant of errors and dirty lines as SDLC was, so if an error occurs or a device fails at one end of a connection without anyone noticing it, the other end will continue to retransmit until it gets the proper response. It can snowball into a big congestion mess."*
Ron Sanderson, manager of network software and support for the State of Illinois Bureau of Communications and Computer Sciences/Information Services division in Springfield

OS/2, which replaced IBM's defunct LAN NetView platform, to manage non-TCP/IP LAN resources. NetView for OS/2, analysts said, was basically NetView for AIX without the Unix box.

"There is a huge part of the user community that never wants to see a Unix box in their network," Dzubeck says. "NetView for AIX isn't going to be the enterprise management platform of choice for LAN management; it's going to be one of the platforms LAN users can choose from."

CONFUSION IN THE TRENCHES

If IBM's widely diversified net management platforms are its greatest competitive strength, then they also may be its greatest weakness.

Users looking to IBM for network management products are overwhelmed in one sense or another because while the company has unmatched enterprise management tools, the sheer number of products confuses many. The company has at least 150 products it classifies as network or systems management packages that run across a variety of platforms.

"The breadth and depth of IBM's network and systems management coverage is really unmatched in the industry," says Anura Guruge, an independent analyst based in New Ipswich, N.H. "Unfortunately, when users look into a solution, they find they need 45 products, four heads and eight hands to make it all work together — it's much too complicated."

Who's counting?

IBM executives say AIX for NetView can manage as many as 30,000 objects today, but it needs to handle two to three million.

The problem is compounded by the fact that most users are left alone to figure out which of the 150-piece puzzle will fit together to solve their problems, Guruge says. Still, while the plethora of products is the root of so much customer confusion, IBM's Warner believes the firm's net management product line is an asset few companies can match.

"Our greatest challenge is to simplify this strength," Warner says. "We need to make it a whole lot easier for users to manage their enterprises. That means we will package and deliver products differently and in a more integrated fashion."

Users have been telling IBM for months to simplify its product offerings and help them more easily put together the net management puzzle. For example, one of IBM's user advisory boards, the Network Systems Customer Council, recently told IBM that users want to see a more unified net management strategy.

"There are too many products that aren't well coordinated," says Stephen Hall, senior vice president of information systems at Med-America Health Systems Corp. in Dayton, Ohio.

DIAMOND IN THE ROUGH?

IBM's answer to its complexity problem is known as Karat, a new object-oriented management technology the company will use to build common management applications across all of its major environments — OS/2, OS/400, AIX and MVS. Karat also contains IBM's System Object Model (SOM) and Distributed SOM code, as well as Common Object Request Broker Architecture technology that third-party developers can use to build their own objects on top of Karat. For users, this means more tightly integrated management application functions.

In its first incarnation, Karat will include a variety of object-based applications, such as a data management program that will allow users to initiate data backup and recovery across SNA and LAN environments. It will also include object-based net management facilities, workload management features, topology discovery, alerts and problem-tracking capabilities.

"One of the primary goals with Karat is to give users deploying distributed systems the kind of reliable and efficient automated network and systems management mainframe users have enjoyed for years," says Kathleen Kincaid, director of SystemView marketing for IBM. "We aren't just cobbling together applications. We are integrating existing management applications with new object-oriented applications — all working together."

The idea of object-oriented net management is that users can integrate applications and start to perform functions between applications that they could never do before.

"Today, users would have to work separately with each management product because a performance monitor, trouble-ticket and management platform all run separately," Kincaid says. With Karat, all of the different procedures are integrated and interact automatically.

Among the products IBM reportedly will include in the first release of Karat, scheduled to be available early this year, will be NetView

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100Base-T adapters

High performance can't top 100VG-AnyLAN

By Stan Bush, Neill Cameron, Fan Huang and Wenjin Yang

If you're thinking about upgrading your saturated Ethernets to 100Base-T technology, get ready to make some trade-offs between network interface card (NIC) throughput and host CPU performance. Our testing revealed significant differences between the performance of different brands of NICs. It showed that performance is highly dependent on the configuration of NICs and computers.

For this week's testing, we brought in 100Base-T cards from Grand Junction Networks, Inc. and Intel Corp. Although we requested adapters from other vendors, none had NICs available in time for our testing, indicating how new this technology is.

PC bus modes
Figure 1

I/O-mapped mode	Uses the computer's standard I/O channels for communication.
Memory-mapped mode	A specific block of 8K bytes of the computer's memory address space is dedicated to communicating with the LAN adapter card. This mode yields better performance than I/O-mapped mode.
Bus master mode	Allows direct memory access between the LAN controller and system memory. When bus master mode is used, the LAN adapter has complete control of the system's address and data control lines. This yields higher performance and lower CPU utilization than I/O-mapped or memory-mapped modes.

Our testing showed that Grand Junction's FastNIC 100 supported faster throughput, but Intel's EtherExpress Pro/100 provided adequate performance with less load on our server's CPU.

We also compared 100Base-T adapter performance with one of the 100VG-AnyLAN adapters we reviewed last week. Those results confirm the need for network administrators to perform their own testing using their own equipment to determine which technology works best in their environment.

For information on our test procedures, see last week's review of 100VG-AnyLAN adapters. In our 100Base-T testing, we used a Grand Junction FastHub 100 hub.

We received six FastNIC 100 Extended Industry Standard Architecture (EISA) cards from Grand Junction and 12 EtherExpress Pro/100 Peripheral Component Interconnect (PCI) cards from Intel for 100Base-T networks. Both vendors' cards come with menu-driven diagnostic and configuration software and a reference guide.

The Grand Junction adapter automatically selects the best data-transfer mode (bus master mode, I/O-mapped mode or memory-mapped mode) supported by the computer for maximum throughput (see Figure 1), but the Intel cards must use bus master mode.

We found the Intel PCI cards to be easier to install because PCI computers are designed to automatically detect and configure PCI-compliant adapters. You simply start your computer, and it configures the adapter during the boot process. Therefore, you don't need to consider assigning interrupt requests (IRQ), which must be done manually in ISA and EISA computers. Another benefit of Intel's cards is that the server and DOS Open Datalink Interface client drivers support shared interrupts. This means that more than one card in the same computer using the same IRQ will not conflict as they would in an ISA or EISA computer.

We did have one minor complaint about the Intel cards' installation. Reading the software from the diskette takes longer than with any of the other software we used in these tests. One possible reason for this may be that Intel's Readme file is very large and comprehensive; it covers every aspect of the installation process as well as troubleshooting.

The Intel cards have only a single RJ-45 connector, but it can be used for either the 100M bit/sec speed or the lower 10M bit/sec speed as the card automatically adjusts to the correct speed. On the other hand, the Grand Junction cards also have only one RJ-45 connector, but it only works at 100M bit/sec. There is no provision for automatic sensing or another connector to work with the slower speed for backward-compatibility purposes.

Grand Junction provides two simple client/server utility software tests with their products: Fastprod and Hspeedo. Fastprod reads a bit-mapped image file from the server and measures the resulting client network throughput in megabits per second. Hspeedo is a performance demonstration tool used to test network utilization. Both were compatible with all of the NICs used in our *Network World* reviews of these products.

Our tests of 100Base-T cards showed that the per-client throughput (see Figure 4, page 36) is higher for the Grand Junction NICs than for the Intel NICs, in some cases by almost 2-to-1. On the other hand, this comes at the expense of server CPU utilization. In most cases, the Intel NICs use fewer CPU cycles for similar throughput than do the Grand Junction NICs.

The throughput for larger file sizes was greater than that for the small sizes, as we saw with 100VG-AnyLAN adapters (see Figures 5 and 6, page 36). In this case, larger files varied from about 20% to about 70% higher throughput than the smaller files. The variations were much higher for Grand Junction's cards than for Intel's.

If absolute maximum throughput is your objective, you should consider the Grand Junction NICs. If you do not need maximum throughput but are concerned about saving server CPU cycles to spend on something other than communications, you should consider the Intel NICs.

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100BASE-T VS. 100VG-ANYLAN

Our first series of comparative tests using Novell, Inc.'s Perform3 benchmark involved a single Compaq Computer Corp. DeskPro 66M server and one to three clients. Hewlett-Packard Co. NetServer 4/66 LC computers were used as clients. For 100VG-AnyLAN, the clients were connected to the server using HP NICs in both the server and each of the clients. For 100Base-T, the clients were connected to the server using Grand Junction NICs in the server and each of the clients.

The tests were run for a small file size of 4.096K bytes decremented by 512-byte steps and with a large file size of 65K bytes decremented by 8.192K-byte steps. The Perform3 software causes each client to request a file at the same time as each of the others, starting with the largest file size specified for the test. The file sizes then are decremented by the step size, and each client again makes a request for the new size file. This process is repeated until the file size is zero.

Because the requests are synchronized, each client in the test is equivalent to several clients in a real network.

The 100Base-T tests showed that throughput and CPU utilization increase slightly with increasing file sizes (see Figure 7, page 36). However, throughput per client remains about the same as clients are added. The maximum aggregate throughput for the server at three clients with the large file size is 4.6M byte/sec. This

Continued on page 36

NET Result

Product	FastNIC 100 EISA adapter	EtherExpress Pro/100 PCI adapter
Key findings	▸ Comes with software test utilities. ▸ Incompatible with 10M bit/sec Ethernet.	▸ Automatically senses port speed.
Vendor	Grand Junction 47281 Bayside Parkway Fremont, Calif. 94538 Tel: (800) 747-3278 or (510) 252-0726 Fax: (510) 252-0918	Intel 5200 NE Elam Young Parkway Hillsboro, Ore. 97124 Tel: (800) 538-3373 or (503) 264-7354 Fax: (800) 525-3019 or (503) 264-6835
Price	$499	$259

Continued from page 35

is equivalent to 37M bit/sec maximum throughput. This throughput is achieved with about 34% server CPU utilization.

In comparable tests of the 100VG-AnyLAN, we saw similar results, except that the maximum aggregate server throughput was considerably higher. At three clients, with the large file size, the maximum aggregate server throughput was 10M byte/sec. This is equivalent to 80M bit/sec maximum throughput. This throughput was achieved with about 32% server CPU utilization.

On the other hand, if we compare the performance of 100Base-T and 100VG-AnyLAN adapters with small file sizes, we find most of the numbers to be very similar.

The maximum aggregate throughput with three clients is slightly higher for 100VG-AnyLAN, but the CPU utilization is also about 10% higher. This means that while the two LANs are transferring about the same amount of data, the server CPU with the 100VG-AnyLAN adapter has somewhat less capacity left for other tasks.

Next, we looked at similar configurations, except that the server was an HP NetServer 4/66 LF instead of the Compaq server. In this set of tests, we found that the Grand Junction NICs performed better than the HP NICs by anywhere from 15% to 100%, depending on the file size and number of clients.

These results indicate that there are trade-offs between throughput and server CPU utilization. We also found that the exact combination of equipment makes a significant difference.

Thus, we cannot say based on our testing that either 100Base-T or 100VG-AnyLAN is a clear winner. Network architects will need to do extensive testing based on their individual needs and constraints. ☒

NETWORK WORLD TEST alliance

The alliance is a cooperative of users, consultants, educators and integrators that applies its technical and business skills to analyze and compare strategic network products. A list of alliance partners can be found on page 29.

The authors are all members of the Center for Advanced Research in Telecommunications at the University of Colorado in Boulder. Bush is director of the Telecommunications Systems Laboratory, and Cameron, Huang and Yang are engineering research assistants.

Fast Ethernet flavors

The original idea of a faster Ethernet spurred three proposals to the IEEE 802.3 standards body. Hewlett-Packard Co.'s 100Base-VG did not use Ethernet's carrier-sense multiple access with collision detection media access control protocol, so it was split off into a new 802.12 body, expanded to also carry token-ring 802.5 packets and renamed 100VG-AnyLAN.

There were two CSMA/CD proposals: 100Base-X, now called 100Base-TX; and 4T+, now called 100Base-T4.

100Base-T is a 100M bit/sec CSMA/CD 802.3 Ethernet-like LAN, also known as fast Ethernet. There are three flavors: 100Base-TX, 100Base-FX and 100Base-T4, as described below. Repeaters or hubs must support the appropriate version. All three versions of 100Base-T are defined in the IEEE P802.3u/D2 supplement from the IEEE 802.3 committee.

100Base-TX is a renaming of the twisted-pair variant of 100Base-X and borrows the physical characteristics of Fiber Distributed Data Interface's Twisted Pair-Physical Medium Dependent (TP-PMD) physical layer protocol. However, it uses Ethernet framing and CSMA/CD at the media access control layer.

100Base-FX is basically a renamed version of the fiber variant of 100Base-X. It borrows the physical characteristics of FDDI's normal fiber PMD but uses Ethernet framing and CSMA/CD.

100Base-T4 is a renamed 4T+. It uses four pairs of Category 3, 4 or 5 unshielded twisted-pair (UTP) wiring and 8B6T encoding (where 8 bits are encoded into six ternary or three-level signals) and 25-MHz clocking on each of the four pairs of wires.

Some questions have been raised about the state of the 100Base-T standards draft. In a recent Usenet posting, a participant from the IEEE 802.3u (fast Ethernet) committee claimed that the draft was widely accepted within the committee and that all technical issues have been settled. The final standardization is expected to take place early this year.

For all flavors, network interface cards support a media-independent interface such that an external adapter actually determines which version can be attached, just as the AUI allows a 10M bit/sec 802.3 network to use any of its several types. Packets are identical to 802.3 packets. However, the nature of CSMA/CD requires that the overall radius of the network be limited to one-tenth the size of a 10M bit/sec Ethernet. This is due to the timing and frequency of the transmitted pulses.

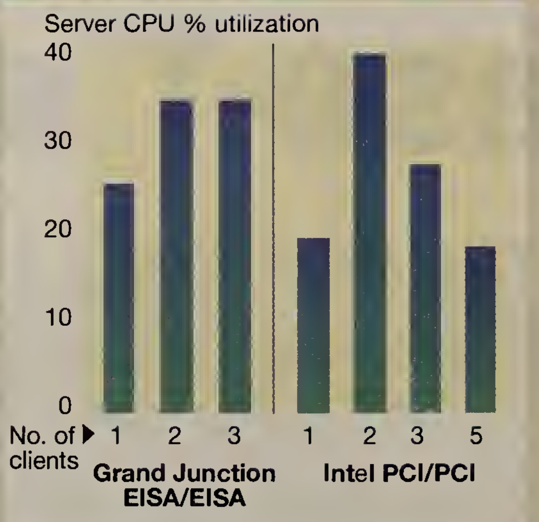
The attenuation of the signal increases as the frequency increases. To compensate, the transmission media must be proportionately shorter. A typical maximal system might consist of repeating hubs on a very short backbone (no more than 5 meters), with the hubs supporting links of up to 100 meters. Single-hub networks may allow up to 325 meters. Extension of the network beyond these limits requires a switch, router or bridge.

A couple of vendors have announced transceivers that operate on optical fiber, which should make it possible to interconnect 100Base-T products physically separated by as much as 2 km.

100Base-T cards and 100VG-AnyLAN cards are supported on different cabling. 100Base-T cards use only two-pair Category 5 UTP, while 100VG-AnyLAN cards can use four-pair Category 3, 4 or 5 UTP. Some 100VG-AnyLAN cards also can use two pair of Type 1 shielded twisted-pair wire.

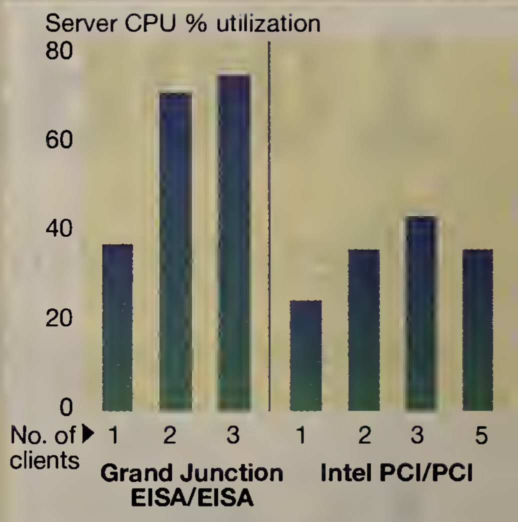
100Base-T performance results

Client NIC/server NIC efficiency for small files
Figure 2



Configuration: HP NetServer LF, maximum file size 4.096K bytes and step size 512 bytes.

Client NIC/server NIC efficiency for large files
Figure 3



Configuration: HP NetServer LF, maximum file size 65K bytes and step size 8.192K bytes.

Single client throughput (K byte/sec)
Figure 4

Client NIC/ server NIC	No. of clients	HP NetServer LF	
		Max. file size 4.096K bytes and step size 512 bytes	Max. file size 65K bytes and step size 8.192K bytes
Grand Junction EISA/EISA	1	2,210	3,967
Intel PCI/PCI	1	1,668	2,010

Server throughput and network utilization for small files
Figure 5

Client NIC/ server NIC	No. of clients	Maximum client (K byte/sec)	Aggregate server (K byte/sec)	Max. % net utilization	Peak net (packet/sec)
Grand Junction EISA/EISA	1	2,210	2,210	20	2,589
	2	1,844	3,683	31	4,295
	3	1,641	4,919	32	6,282
Intel PCI/PCI	1	1,668	1,668	28	2,850
	2	1,654	3,294	30	5,525
	3	1,348	3,994	29	6,560
	5	809	3,856	32	9,213

Configuration: HP NetServer LF, maximum file size 4.096K bytes and step size 512 bytes.

Server throughput and network utilization for large files
Figure 6

Client NIC/ server NIC	No. of clients	Maximum client (K byte/sec)	Aggregate server (K byte/sec)	Max. % net utilization	Peak net (packet/sec)
Grand Junction EISA/EISA	1	3,967	3,967	30	2,816
	2	3,097	6,191	35	3,326
	3	2,551	7,651	42	4,127
Intel PCI/PCI	1	2,010	2,010	17	2,905
	2	1,940	3,880	31	5,226
	3	1,706	5,083	29	6,560
	5	1,137	5,732	29	4,709

Configuration: HP NetServer LF, maximum file size 65K bytes and step size 8.192K bytes.

100Base-T EISA vs. 100VG-AnyLAN EISA
Figure 7

🟧 = 100Base-T ⬜ = 100VG-AnyLAN

No. of clients	Server CPU % utilization		Maximum client (K byte/sec)		Aggregate server (K byte/sec)		Max. % net utilization		Peak net (packet/sec)	
1	14	13	1,423	1,523	1,423	1,523	21	19	2,532	2,297
3	20	29	1,370	1,445	4,077	4,343	33	36	6,282	6,210

Configuration: Compaq server, maximum file size 4.096K bytes and step size 512 bytes.

No. of clients	Server CPU % utilization		Maximum client (K byte/sec)		Aggregate server (K byte/sec)		Max. % net utilization		Peak net (packet/sec)	
1	14	7	1,608	4,545	1,608	4,545	15	41	2,490	3,658
3	34	32	1,566	3,335	4,585	10,003	29	91	4,894	7,992

Configuration: Compaq server, maximum file size 65K bytes and step size 8.192 K bytes.

IN-BOX

Continued from page 29

CNE or rely on my four years of network experience. The information I have been receiving about CNEs has convinced me that my four years of experience should be enough.

Steve Graham
Network administrator
University of Oklahoma
College of Continuing Education
Computer Network
Norman

Share it

I enjoyed Ben Rothke's column "Separating CNE hype from reality." I wonder if I could convince him to upload the article to NOVUSER, LIB 1, New Uploads on CompuServe. The CNE is a consistent item for discussion in this forum. I think some of Rothke's comments are quite valid and would add to the discussion. However, since Novell does not charge anything above the normal CompuServe rates for access to NetWire, it would be difficult for the company to give CNEs a discount for on-line time, as Rothke suggests.

Don Crawford
NetWire systems operator
DGC Consulting
Phoenix

Editor's response: Rothke did upload his column as suggested above.

More changes needed

I am two tests away from becoming a CNE. I agree with 99% of what Ben Rothke said in his column about CNE hype vs. reality. However, I think there is a point in becoming a CNE — to find out things you may not have already known and to at least show that you made an effort to learn something.

CNEs do get a bum rap and will probably continue to, as well. I am hoping new Novell Chief Executive Officer Robert Frankenberg is going to make a big change in how Novell supports its CNEs. Case in point, I think it was great that on the NetWire forum Novell offered a prerelease version of NetWare 4.1 for $40 (plus shipping and handling). It would have been even better if Novell had contacted all CNEs, Enterprise CNEs and Certified NetWare Instructors in November and offered it for $10 (plus shipping and handling).

Jim McMurry
Information support analyst
Academic Systems Corp.
Mountain View, Calif.

Thinking twice

I am an Australian undergraduate student studying engineering at Michigan State University. I was really surprised by Ben Rothke's column about the worth of a CNE.

I had always assumed that becoming a CNE meant all kinds of special privileges, something I was interested in pursuing one day. I see now that it is something that I will have to reevaluate.

Adrian Bye
Student
Michigan State University
East Lansing

Nobody to Novell

I have to agree with Ben Rothke: Once you get your CNE from Novell, you go back to the ranks of a nobody.

I have been a CNE for two years, and three of my friends have been CNEs for even longer. None of us have received any news or help from Novell to keep us up-to-date or in touch with the company.

I would like to ask what is needed to join Netware Users Intern (NUI). I have not heard of this organization and am interested in getting a membership and newsletter.

Another note: To add to the ridiculous nature of CNEs, I recently received a card offering a two-user version of NetWare 4.10 for free.

Upon reading further, I discovered that this offer is only valid if you join the Network Professional Association for $150 or extend your current membership for 12 months for the same price. What a deal!

From what I've heard about NetWare 4.X, to really tinker with the public directory services, you need more than one server to configure. I guess Novell wants you to buy the next server at full price if you expect to teach yourself anything about the new NOS.

Thanks to Rothke for speaking up.

Tim Baum
Network specialist
Ameritech Knowledge Data
Cincinnati

Rothke's response: To find the location of the nearest NUI chapter, call Novell at (800) 638-9273.

Paper tiger

I totally agree with Ben Rothke's assessment of the CNE. I teach classes on Novell's NetWare and Microsoft's Windows NT at a state technical institute and run my own business. I am often called in to help CNEs at business sites solve problems.

I have found that many CNEs are good test takers but poor problem solvers. I never had the time to become a CNE, and when I think about it, I always ask myself "Why?" Well, I learned the old-fashioned way — through research, hands-on experience and problem-solving techniques — because I have found many of Novell's sources of education to be lacking in all but the basic network skills. I learn more from the people in the trenches.

Rothke's column hit the nail right on the head. I have told my students many times that a paper certificate means nothing if you can't back it up.

Rick O'Kelley
Computer systems analyst
NTK Enterprises
Fayetteville, Ark.

Let us know what you think

Have you seen an article in *Network World* with which you strongly disagree or heartily concur? If so, send us your thoughts in a letter to the editor via mail to Editor, *Network World*, 161 Worcester Road, Framingham, Mass., 01701; via fax to (508) 820-3467; or via the Internet to network@world.std.com.

Please include your name, title, company, city and a phone number for verification.

Worth the cost?

I too am a CNE with experiences and concerns similar to the ones Ben Rothke wrote about in his opinion column.

I am toying with the idea of going for an Enterprise CNE certification but now wonder if it's worth it.

Steve Keagy
Network information systems manager
General Services Administration
San Francisco

Good for something

Ben Rothke is right about Novell's lack of involvement with its CNE and ECNE force. However, I did want to let you know that, from my experience, the CNE and ECNE courses do serve one valuable purpose: Namely, ECNE certification is required for one to achieve Compaq Computer Corp. Accredited Systems Engineer (ASE) status. And an ASE is well worth the certification.

Never before have I had better support, heads-up technical information and on-line access to resources than since I became a Compaq ASE.

Thanks to Rothke for the words of wisdom.

Taylor Patterson
Systems integration manager
ComputerLand of Southern California
San Diego

In the future

Your article about the Federal Communications Commission's spectrum auctions (Dec. 5, page 1) contains the statement "In February, the NTIA will hand eviction notices to government microwave users in the 1.7-GHz bands so the NTIA can hand that spectrum over to the FCC for auction, too."

That statement has created a great amount of internal messaging at my organization for the simple fact that we have many such links in our area.

However, while your article makes this spectrum eviction appear to be a near-term matter, we have been told the spectrum auction for these frequencies won't take place until 1999.

If you have more clarifications or news, I will look for it in print or via electronic mail.

Thanks for all your reporting. News is often times hard to come by here.

Gary Skaggs
Manager, network systems and OS/2 evangelist
National Severe Storms Laboratory
Norman, Okla.

Deeper issues

Regarding your article about mainframe sales increases (Dec. 12, 1994, page 1), I believe the mainframe vs. client/server discussion reflects deeper management issues.

Management — of change, complexity, sales and costs, to name a few variables — implies control issues. Here, the mainframe embodies centralized control and security while the client/server microcomputers embrace the freewheeling, risk-taking, entrepreneurial, creative spirit. There is a natural tension here that will never go away.

Even when a microcomputer has two times the millions of instructions per second of a mainframe at one-tenth the cost, there will still be that natural mainframe vs. client/server mentality. Not until the micro is ensconced in a vaulted glass house with all the attendant security and resources, will it become the mainframe. Still, the client/server or (can I even whisper it?) peer-to-peer mentality will live on to challenge the new king.

A winning strategy needs to focus on management where the best solution avoids balkanization-like polarity and moves to achieve goals set forth and embraced by the owners, directors, managers and employees.

Paul White
Sales and advertising manager
Story House Corp.
Charlotteville, N.Y.

Deep cuts

Regarding your article "IBM makes further cuts in Networking Systems unit" (Dec. 5, 1994, page 11):

The IBM Networking Systems people I deal with are exemplary. They are very knowledgeable and conscientious. They do a very good job of keeping me informed about seminars, new technology, fixes and so on. But they are too few and far between. If these IBMers weren't of such high caliber, IBM would be in a world of hurt.

Ray Westphal
Telecommunications analyst
Purina Mills, Inc.
St. Louis

Get the picture

Regarding your product review "Videoconferencing today: Not a pretty picture" (Dec. 5, 1994, page 47):

Reviewing a couple of good but decidedly low-end videoconferencing products and then writing a negative headline about the effectiveness of a whole industry is shortsighted at best. You exacerbate your error with the conclusion "while large systems provide better quality video," they mean "a significant investment in what are still proprietary systems."

VTEL Corp. and a number of other large system providers do indeed offer superb quality video, examples of which you can see in many top hospitals, universities and corporations.

VTEL's systems have been standards-based for years, and most now come with auto-configuration that will allow easy link-ups with older, proprietary systems. High-end videoconferencing today is nothing less than an astounding productivity tool. You owe your readers a more realistic appraisal of this fast-growing industry.

Glenn Pierce
President and chief operating officer
VTEL
Austin, Texas

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Help desk

Continued from page 2

also can establish a company library of the CNE study guide and books available from publishers of communications manuals, such as Howard W. Sams & Co. If passing the test isn't your primary goal, use an independent training organization.

I also would recommend centering on integration issues such as running Windows on nets, TCP/IP connectivity and infrastructure management. Some user groups sponsor regional seminars on these topics.

I need some documentation of industry standards for staffing a help desk. I'm lobbying upper management for more help and need some ammunition. Right now, our help desk staff includes one network technician, one phone systems technician, three programmers and myself. One programmer can double as a technician in a pinch.

Do I need to hire more staff? Do industry standards for staffing a help desk exist?

Jim Stelle, Austin, Texas

Char LaBounty, director of membership services for the Help Desk Institute, an organization that provides education and training to help desk professionals, advises:

Before you can estimate whether you need to hire more staff, you need to amass some information (or ammunition) about current and anticipated call volumes and average call length. Also, you should figure out the current service level you have committed to providing for your users.

In addition, ask yourself: Specifically what types of support does my group provide or plan to provide? Do we provide only first-level support? If so, where do the unresolved questions get routed? What is our first-call resolution rate? Do we have an automatic call distributor (ACD) installed? What about a problem management system?

You need this information because these elements are the metrics by which the help desk and support industry benchmark service.

If you have an ACD, you should be receiving reports daily that tell you how well you are serving your users, specifically in terms of call handle rate, first-level resolution rate and average speed-to-answer rate. Be specific about asking management what their expectations are in terms of service levels. There are staffing models available throughout the industry into which you can input all the above information. Those models will project the staffing level you need based on your service levels.

In addition, the Help Desk Institute provides the industry with an annual member survey that evaluates current practices of more than 4,500 members in areas of help desk and support center structure, incoming call composition, help desk personnel and tools. Also, "LifeRaft," our industry journal, occasionally provides insight about how to staff help desks. Our Directory of Members includes a complete update segmented six different ways that you can use to compare your organization to companies providing similar support.

No matter how you proceed, make sure you have a clear understanding of what both management and users expect concerning level of service. That information will go a long way in helping you evaluate how to establish and build the appropriate organization to best meet your users' needs.

To contact the Help Desk Institute for further information, call (800) 248-5667.

IBM

Continued from page 33

for AIX, Systems Monitor, Trouble Ticket/6000, LAN Management Utilities for AIX, NetView Distribution Manager and all of the management applications for IBM's bridges, hubs, routers and ATM switches.

Object class libraries and other tools will help users build objects, and applications also will be announced later this year. Also on tap, IBM plans to spin out new applications to help users balance workloads among different platforms, discover topologies and track alerts.

Karat's first implementations will appear in the first half of this year, though some beta sites already exist, Kincaid notes. The first products out the door will operate on workstations running IBM's AIX, OS/2 and Microsoft Corp.'s Windows. Likely by the fourth quarter, Karat will be rolled out for the OS/400 and MVS mainframe operating systems.

Karat applications will be able to receive management data from AIX, OS/2, DOS and Windows clients running new agent software built on the Desktop Management Task Force's Desktop Management Interface (DMI). IBM recently announced it will implement DMI on all of its distributed platforms and use it to feed information to Karat-based systems (*NW,* Oct. 17, 1994, page 4). Other DMI-compliant systems, such as those from Novell, Compaq Computer Corp. and Digital, will also be able to feed management information to Karat systems.

OUT THE DOOR

IBM has been criticized in the past for coming out with grandiose schemes, such as SystemView, that end up being long on promises and short on deliverables.

But analysts say it will be different this time around.

"IBM is starting to build a state-of-the-art way of more easily delivering distributed network and systems management products," Guruge says.

Budgetary constraints on corporate IBM, however, may limit the firm's strategy of being the net management superstore. With fewer people — nearly 10% of the workforce has been cut from the networking group in Raleigh, N.C. — it's harder to meet product development deadlines and ship dates, analysts said.

Analysts estimate IBM's net management products bring in more than $1 billion of revenue to the company's Network Systems line of business, which totals about $5 billion a year. They also see that number remaining stable or increasing slightly in the next few years as users buy products that help them get a handle on distributed enterprise nets.

"IBM has to continue competing effectively in the net management arena because it helps [the firm] retain account control in a lot of shops," says Todd Dagres, vice president of equity research for the Robinson-Humphrey Company, Inc. in Atlanta. "It can't sit still and tread water anywhere along the way."

Key to IBM's success in this market will be how fast it gets out Karat products. If Karat turns into another SystemView, users could abandon IBM in droves. And, while IBM executives haven't said so, it is clear to most observers that IBM's current overall financial situation, while improving, could preclude IBM from developing so many different products in the future.

Cooney is a senior editor at *Network World.*

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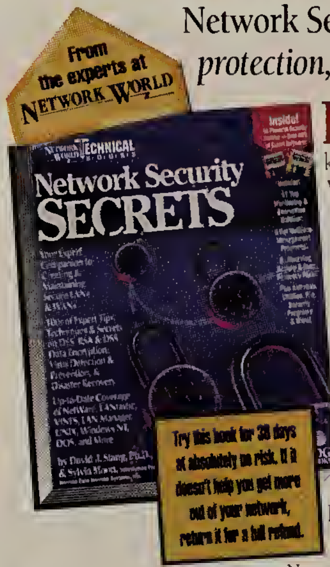
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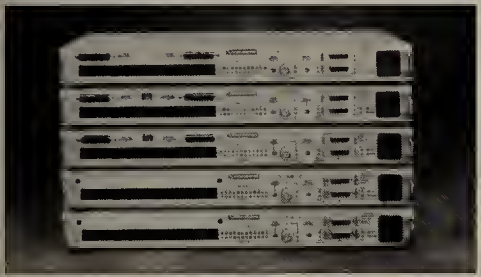

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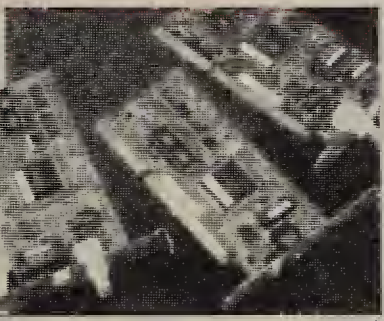

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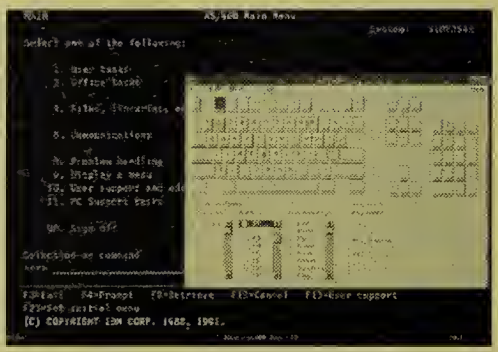

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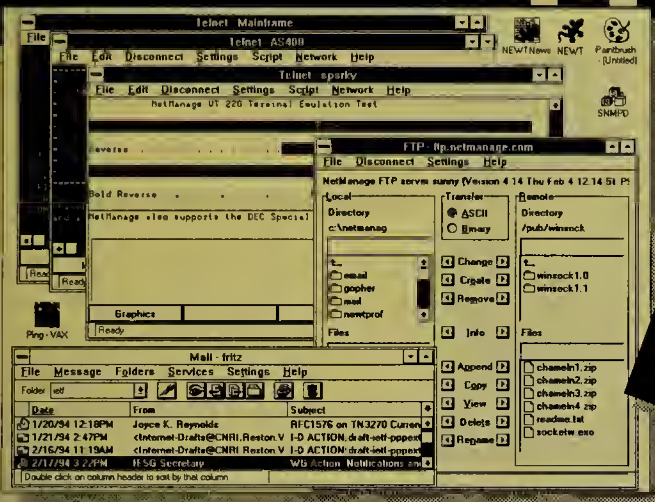

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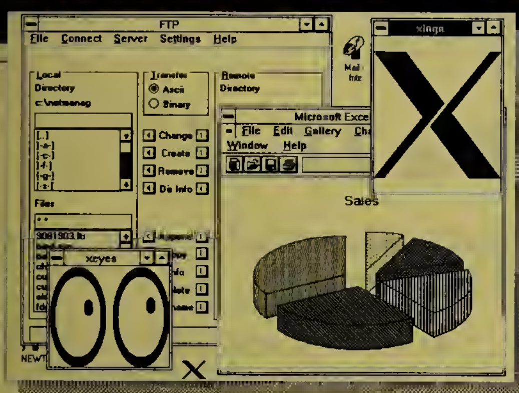

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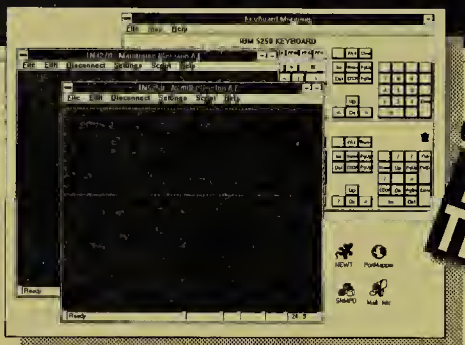

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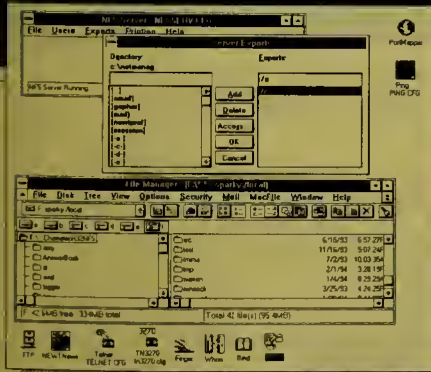

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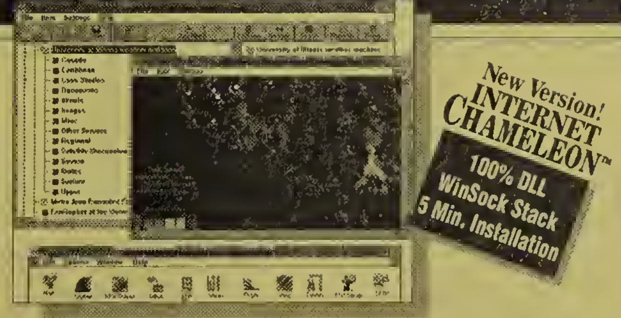

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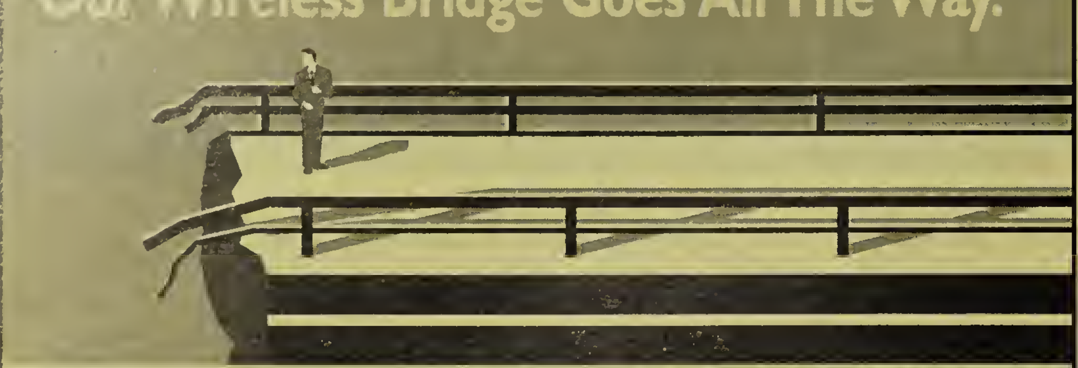

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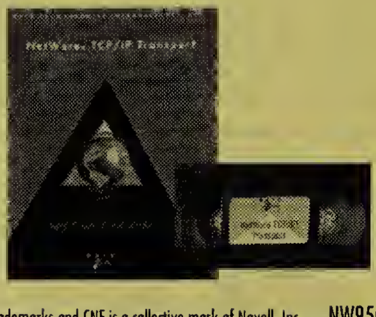

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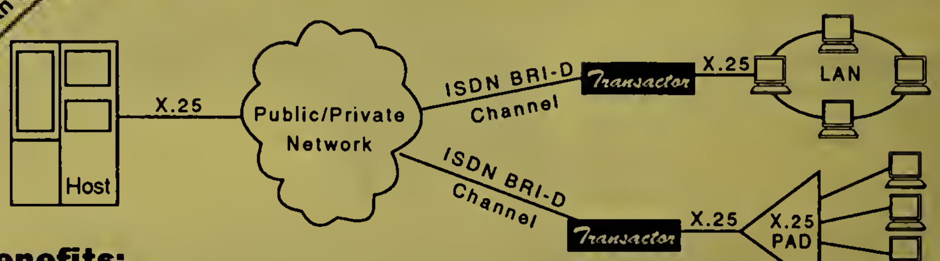

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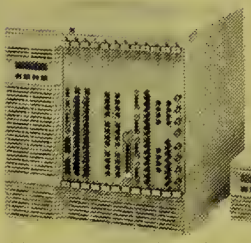

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ADSI will be offered consistent with industry standards as defined in Bell Communications Research (Bellcore) technical documentation.

For technical information related to this offering, please refer to the following documents:

Generic Requirements for an SPCS to Customer Premises Equipment Data Interface for Analog Display Services Interface
TR-NWT-001273

Customer Premises Equipment Compatibility Guidelines for the Analog Display Services Interface
SR-INS-002461

To obtain copies of these documents contact:

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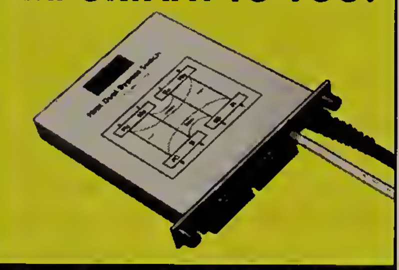

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Gateways

Continued from page 1

6200 and 2200 Convergence Branch Access Node (CVB). All three boxes are built using Reduced Instruction Set Computing technology and run software developed by CNT that includes components the company last year acquired from Brixton Systems, Inc.

At the high end, the CVE boxes are positioned as more functional alternatives to Cisco Systems, Inc.'s channel-attached router, IBM's 3745 front-end processor and its 3172 LAN-to-mainframe gateway.

"The channel-attached gateways or routers cannot perform the functions CNT will have right up front," said Anura Guruge, an independent analyst based in New Ipswich, N.H.

The CVE 6500 and 6200 will ship with two LAN interfaces, which can be token-ring or Ethernet, and two serial WAN interfaces, which support Synchronous Data Link Control Connection, X.25 or frame relay.

The only difference between the two boxes is that the CVE 6200 also supports a T-1 interface. The CVE 6200 is positioned only as a remote feeder node for customers with CNT ChannelLink nets, whereas the 6500 is a central-site node designed to sit in the data center. ChannelLink is CNT's mainframe channel extender.

Both boxes can be configured to support a full suite of TCP/IP gateways, including tn3270 and tn5250, plus a Novell, Inc. IPX gateway. Each gateway can support as many as 1,000 users, and the box can support a maximum of eight to 10 gateways, depending on processor memory.

According to Corneille, the CVE's support of multiple gateways will eliminate the need for gateways to handle different types of traffic.

The CVB 2200 is positioned as an SNA branch feeder node capable of tying as many as 254 SNA users to a TCP/IP backbone. The box terminates SNA traffic before it reaches the WAN and encapsulates it in a TCP/IP packet for transport across the WAN.

While this capability is not unique — vendors such as Netlink, Inc. and Sync Research do the same thing — the way CNT does it is, Guruge said. CNT terminates SNA session at Layer 5, the session layer, rather than Layer 2, like Data Link Switching does, which allows for a direct session establishment over the internet to the target application.

It is here that the Brixton technology comes into play. The Brixton technology is key because it features the unique ability to let the 2200 emulate SNA PU 4 and PU 5 nodes, essentially creating a minimainframe for SNA communications that lets the boxes switch traffic to applications on multiple mainframes.

"The ability to actually switch the SNA traffic to multiple locations is a key advantage that no other vendors have," Guruge said.

The CVE products are expected to be available by midyear. Pricing has not been set yet, but Corneille said the CVB 2200 should cost about $10,000, and the CVE 6500 and 6200s should start at about $40,000.

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Mobile apps

Continued from page 8

nomically appropriate units into traders' hands, said Phillip Schultz, director of handheld technologies for CBOT.

CBOT, along with the Chicago Mercantile Exchange, worked with Seiko Corp. to build a handheld for traders that weighs slightly more than one pound. The two exchanges also teamed with Synerdyne Corp. for application software that emulates handwritten buy-and-sell cards and displays other trade-related information.

CBOT designed the system itself because of the unavailability of PDA software and a lack of hardware that was light and fast enough for traders who make split-second decisions, Schultz explained. CBOT designed its PDA with a 386 processor and is already upgrading it to a 486. Most PDAs have lower powered processors.

CBOT designed the system because of the unavailability of PDA software and a lack of hardware that was light and fast enough for traders who make split-second decisions.

Schultz said he is discouraged that he has no choice in hardware platforms and, thus, no buying clout. For now, he is locked into his custom-developed PDA because his application will not port to others — one of many issues facing early adopters of mobile systems.

Monsanto used the PDA Forum to describe a new agricultural application that allows farmers to optimize yield decisions by carrying historical data about land, crops and livestock with them into the field.

The company developed database software for personal computers and synchronization software that allows the data to be ported between the PC and an Apple Computer, Inc. Newton PDA, said Marc Vanacht, project manager.

The system allows each piece of land or livestock to be cared for in context of its history — like a medical patient, Vanacht explained. For example, a fertilizer treatment would be determined based on Newton-housed data about past treatments.

Monsanto also is integrating farming instrumentation for yield monitoring, soil-acidity sensors and other information with the database to give workers even more information, Vanacht said.

"The exact day a farmer chooses to harvest his tomato has a 1-to-8 relationship to the price he gets," Vanacht explained.

He said Monsanto this year will experiment with wireless links for the Newton for ordering products from the field and other uses. But he is not bullish that wireless coverage will be sufficient.

"While I can understand why carriers have targeted the biggest cities first, the food and fiber industry accounts for 15% of the gross national product," he said. "And that business takes place in rural areas." ☐

Partitioning

Continued from page 1

titioning new applications to maintain information on pipelines at a nuclear power plant. "I don't expect there to be a cookbook for doing this because everybody's environment is different, but vendors can come up with some guidelines or sample applications."

Shuster is rebuilding an Oracle Corp. SQLForms application using InSync Software Corp.'s Passport software, which lacks the ability to let users drag-and-drop pieces of code to partition applications. While she said this ability can make it easier to move code segments, it does not guarantee that developers will put the code in the right place.

Users said vendors could help greatly by providing links between development tools and system or network management products, Shuster said.

Such monitoring tools could give corporate developers a feel for which parts of a network can best and least support new application traffic, said Robert Gerboth, systems engineering manager at EDS Corp. in Plano, Texas.

"The potential to improve network performance is there because you can move server processes closer to the data," he said. "But once you distribute the application, predicting performance becomes extremely complex."

Because partitioning applications effectively is complex, users are finding it a time-consuming endeavor. Even with drag-and-drop partitioning, developers may still need to write an "amazing amount of C code," said Brent Williams, an analyst at Gartner Group, Inc. in Stamford, Conn.

To eliminate much of that code writing, vendors have begun providing dynamic application partitioning in their tools. Dynamic partitioning automatically reroutes application code as system resources get bogged down. But this technology is even newer, and rarer, than application partitioning.

John Gose, a senior software engineer at the Washington State Legislature in Olympia resorted to tying a self-built partitioned application to a transaction processing (TP) monitor to ensure its effectiveness. He designed the application for tracking legislation with Dynasty Technologies, Inc.'s Dynasty Development Environment.

Unfortunately, running a TP monitor with applications supporting few transactions adds an unnecessary layer of complexity and cost. Several tool vendors are trying to address this issue by adding middleware that performs TP monitor functions for their development tools.

The growing spate of vendors in this space (see graphic) admit that doing application partitioning can be like flying a plane in the fog without radar.

"Some people who are partitioning applications have no idea what's going on underneath the covers in terms of network utilization," said Hal Steger, director of product management at Uniface Corp., which sells a development tool called Uniface that supports application partitioning. "And random partitioning can kill a network."

Steger said that through links to Compuware, Inc.'s Ecotools systems management tools, users can monitor network and CPU utilization from Uniface.

While users still are hopeful that application partitioning will live up to its promise, they will need some extra hand-holding from vendors. Offering sample applications as guidelines for how to best partition code and providing the links to systems and network management tools would be a good start, they said.

Divide and conquer

Product	How it partitions applications
Bachman's Ellipse	Supports static application partitioning; code may be repartitioned but cannot be dynamically changed at run-time.
Dynasty's Dynasty Development Environment	Enables static application partitioning at development time or run-time.
Forte's Application Development Environment	Can dynamically partition applications at development time or run-time.
Gupta's SQLWindows and Parallel SAL	Parallel SAL lets developers move parts of applications from SQLWindows clients to the company's SQLBase servers.
Magna's Magna X	Lets users write code that resides on application servers, providing a link between databases and existing applications written with tools like Microsoft's Visual Basic.
Ochre's Platform	Lets developers repartition applications over the network without shutting down the application.
Oracle's CDE2	Supports drag-and-drop application partitioning but cannot dynamically partition applications.
Powersoft's PowerBuilder	Version 4.0 lets developers do static drag-and-drop partitioning.
TI's Composer	Supports static application partitioning; code may be repartitioned at any time but cannot be dynamically changed at run-time.
Uniface's Uniface	Supports static application partitioning; code may be repartitioned at any time but cannot be dynamically changed at run-time.
Unify's Vision	Supports static application partitioning; code may be repartitioned at any time but cannot be dynamically changed at run-time.

Oracle

Continued from page 1

relational databases and into the hands of Internet users.

Companies want to sell information and "a huge amount of that information lives in Oracle databases," Batson said. However, linking a relational database to a Web server involves "arcane stuff that takes a fairly sophisticated engineer to put together," he said.

No other relational database companies have announced plans to deliver tools for running their databases as Web servers.

Although Oracle has not publicly discussed its Web strategy yet, its customers were enthusiastic about the news.

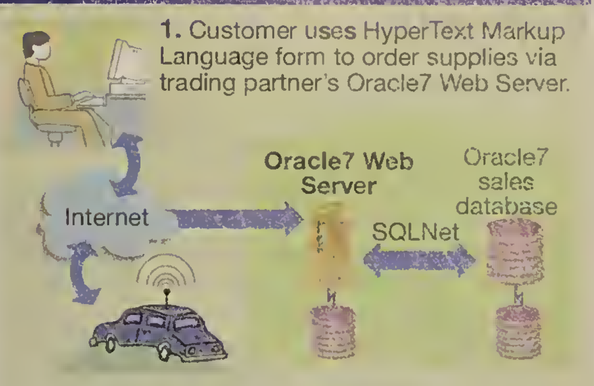
"This concept is appealing because it offers strong security yet still lets users have access to important data," said Peter Detrick, database consultant at the City College of San Francisco, a heavy user of Oracle databases.

THE SETUP

The Oracle7 Web Server will be able to reside on a stand-alone server or share a server with another Oracle database. The software kit will include five examples of how to integrate Web servers with Oracle databases, as well as documentation and application program interfaces to the Internet.

It will be available via the Internet free of charge or on CD-ROM for the cost of the media. The security software will be priced from $200 to $6,000 per server, company officials said.

Oracle7 Web Server in action



1. Customer uses HyperText Markup Language form to order supplies via trading partner's Oracle7 Web Server.

2. Remote employee enters data into corporate sales database via Oracle7 Web Server.

The Oracle7 Web Server Option will let companies build Web servers on Oracle databases accessible to customers, suppliers and employees.

GRAPHIC BY TERRI MITCHELL

Pages on the Web servers that users create with Oracle7 Web Server Option will be read-only, but administrators will be able to add transactional features using PL/SQL, Oracle's SQL dialect. With PL/SQL extensions, end users will be able to select data from tables on connected databases as well as perform updates via the Internet.

Oracle also plans to provide a series of tools to let administrators load documents into Web-based databases. These tools will cross-reference uniform resource locators, or addresses in a document, and make sure they are valid.

Later, Oracle will provide some administrative tools specific to the Web, such as a facility known as a page loader to take information out of Oracle7 and place it on the Web.

StrataCom

Continued from page 1

though most applications are idle much of the time.

Link utilization, therefore, averages about 50% to 60% of capacity, which results in overengineered networks and relatively high ATM tariffs, said Stan Kramer, StrataCom's director of public networking services.

But ABR uses whatever bandwidth is available and can be throttled down to share that bandwidth fairly as other connections come on-line. StrataCom's approach can achieve 90% to 95% link utilization, promising lower overall ATM costs, Kramer said.

CINDY CHARLES

StrataCom's Stan Kramer

"This could be the most significant development in ATM yet, from a user's perspective," Kramer said.

WAR OF WORDS

The ATM Forum's ABR specification gives vendors several implementation options, not all equal.

At its simplest, ABR requires only that equipment support Explicit Forward Congestion Indication (EFCI), which uses a passive end-to-end congestion control loop, and relies on end devices to throttle their traffic. This will be the simplest feature for vendors to implement but will require ABR-capable end devices that don't exist yet.

Another approach, called Explicit Rate Marking, more actively involves switches but still requires end devices to throttle themselves.

The most aggressive implementation would actively control congestion at every node in the network. This hop-by-hop congestion control is similar to the credit-based scheme the ATM Forum considered last year; it affords the tightest control but is also the most complicated and expensive to use.

The approach StrataCom will use is a compromise between these extremes and relies on a feature called Virtual Source/Virtual Destination (VS/VD). It calls for dividing a network into fairly large segments at logical places – where a campus net meets the wide area, for example – and implementing the most involved congestion control at these junctures, which then become VS/VDs.

Each segment is controlled end to end using something as simple as EFCI if desired, while the VS/VD nodes provide intelligent buffering schemes to ease traffic between segments. In that fashion, VS/VD will work with non-ABR end devices.

"You can put highly intelligent switches at key locations and deploy a bunch of dumber switches en masse," said Tom Golway, director of emerging technologies at GCE Consulting, Inc. in New York. "But the user is going to have to know enough to really understand the difference."

"The rule of thumb is going to be that as long as you're using a fairly uniform net design, it is probably reasonable to use simple ABR," said Tom Nolle, president of CIMI Corp. in Voorhees, N.J.

"But the more complicated your network gets, with different boundaries and a mix of equipment, the more likely you'll find that you need a robust implementation," he said.

With 56,000-cell traffic buffers on each T-3 port, the BPX uses a buffer management scheme called FairShare that controls traffic on each virtual circuit (VC). Most switch buffers aren't as large as the BPX's, and none are able to buffer individual virtual circuits.

This lets StrataCom control the flow of every call going through the network, stopping any one user from crowding out others.

Among other vendors, LightStream Corp. and IBM are probably next in the running for such stout ABR support, analysts said.

WilTel is expected to announce this week that it will purchase six BPX switches and expects to finalize its plans for ABR service rollout within the next month, sources said.

The BPX's ABR support requires a $37,500 ATM Service Interface Board and is available now.

Group

Continued from page 4

The current 32-bit Unix specification limits the size of file addresses to 32 bits, meaning Unix systems cannot open files larger than about 4G bytes, Zeigler said. There is no reason, however, why a 32-bit operating system cannot read a file address 64-bits wide, which would exponentially increase the size of the files an operating system can open, he said.

That means a database administrator who has had to break a 16G-byte database into four files of 4G bytes each and maintain an index to link the files can now merge them, Zeigler said. It also will help multimedia applications run more smoothly. A 90-minute film, for example, takes up about 16G bytes of space.

"We've added a data type to make wider pointers to the information," Zeigler said. "There are a few areas in memory where we took out the old cog and put in a bigger one."

The move to develop the API was driven by ISVs concerned that 32-bit operating systems will not support the enormous data files used in data warehousing applications and will have throughput problems with multimedia applications, Ziegler said.

Unix systems vendors, moving slowly toward their own 64-bit operating systems, went along cheerfully because extending the specification makes their products more viable, said Larry Lytle, president and chief executive officer of the UnixWare Technology Group. "They were all moving this direction, and they just didn't want to shoot themselves in the foot doing things different ways," he said.

Microsoft Corp.'s Windows NT has a file address scheme similar to the one under consideration by Zeigler's group. Z

NETWORK WORLD

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Trial

Continued from page 1

work administrators. But that's not totally clear."

What is clear is that management platform vendors are investing their future in object-oriented management. Cabletron Systems, Inc. has as many as 450 engineers dedicated to development of its Spectrum management system and applications, which use object techniques. The company invested $40 million in Spectrum research and development in the last fiscal year.

MCCONNELL

Meanwhile, market leaders are lining up partners from which to license object technology.

SunSoft, for example, has licensed NetLabs, Inc.'s DiMONS technology as the object base for its Encompass platform, which is now shipping. SunSoft will announce Encompass and Solstice, a framework detailing how systems and network applications can be integrated with the platform, later this month (*NW*, Nov. 14, 1994, page 1).

IBM already has beta versions of Karat on the street, with general availability of initial products slated for the second quarter (*NW*, Oct. 31, 1994, page 3).

Vendors say object technology makes application development faster and easier through the ability to reuse code. The result for end users is faster time to market for management products.

The technology also is supposed to enable application integration through the use of an object request broker, which relays messages between applications for retrieving management data (see story, this page). And the ability to represent devices as objects lets them be grouped into classes with common management characteristics.

"It matches the way you do your job," said Dana Dawson, senior network analyst at Cray Research, Inc. in St. Paul, Minn., and user of NetLabs' DiMONS 3G platform.

Some users also are experiencing a reduction in problem resolution time with object technology.

"Object-oriented technology enables us to, for the first time, tie together multiple events, processes and responses so that we are handling problem resolution much faster than before, with little intervention on our part," said John Spiewak, information services director with TVSM, Inc., a publishing company in Horsham, Pa., that is beta-testing IBM Karat products. "We find that we can be proactive, rather than reactive, to problems in our network."

Indeed, the modularity, integration and modeling attributes of objects will help users distribute the management function across the enterprise, and let management platforms and applications scale from workgroups to data centers scattered across the globe, according to analysts.

"Object technology is the root of true, distributed scalability," said James Herman, vice president of Northeast Consulting Resources, Inc. in Boston.

Alan Thomas, systems engineer at The Home Depot, Inc. in Atlanta, said the only way The Home Depot will achieve its long-term network and systems management objectives is through object technology.

"One day, we're basically going to have a self-managed network that will diagnose, correct and tune its behavior according to policies defined by The Home Depot," Thomas said.

TROUBLE SPOTS

But not everyone is sold on object technology.

Rick Sturm, a member of the technical staff at US WEST Advanced Technologies in Boulder, Colo., and president of the OpenView Forum user group, acknowledged the technology could reduce the time and cost of management application development, translating into reduced cost and time to market for products. But he does not expect it to make a difference in the functionality of management products.

"It will not change the management processes; it will not change your ability to manage," he said.

And drawbacks to the technology could surface when users try to migrate from a platform that is not object-based to an object-oriented system. Most vendors say support for legacy management applications will be solved by "wrapping" the old application in an object-oriented shell that makes it appear to the object-based manager as another object.

Software developer ISICAD, Inc., for example, is writing an interface layer that maps applications built for existing platforms to object-based platforms, said George Christensen, director of marketing for the company.

Likewise, a user may want to continue using a platform that is not object-based at the workgroup level and deploying an object-oriented system at the enterprise level.

They must have assurances that current protocols, call routines and application program interfaces will be supported in the object-oriented platform.

Hewlett-Packard Co. is pledging such backward compatibility in the Synergy version of OpenView, expected next year.

"Our implementation of the object infrastructure will be protocol-independent," said Gordon MacKinney, OpenView program manager for HP. "Any application investment [users] have, we'll protect. The APIs they write to, we'll continue to support."

So the apparent benefits of object-based network and systems management include reduced application development time and flexibility in configuring the management environment. Some even say it reduces problem resolution time.

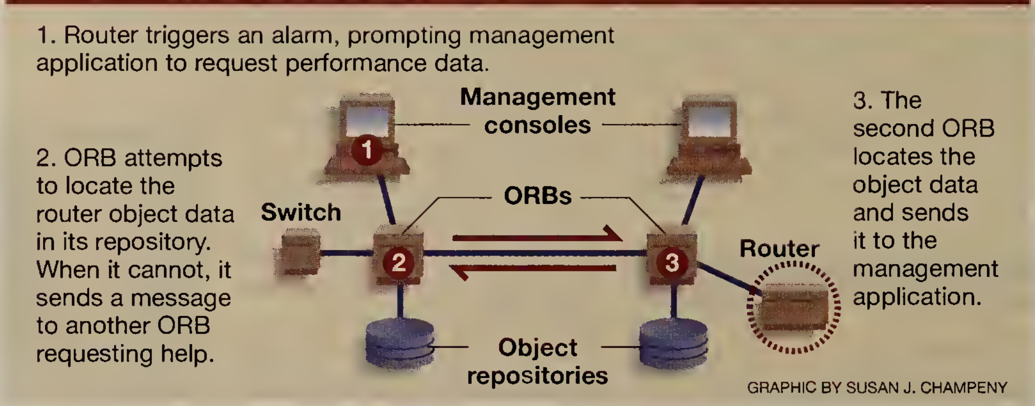
One thing is certain: Users will move to object-based management at their own cautious pace as they look to squeeze every penny out of their existing investment in management platforms and applications and carefully scrutinize these new frameworks to make sure the benefits turn the hype into fact.

➡ Staff Writer Margaret Dornbusc
contributed to this stor

Comments?

See "How to reach us" on the back page.

How object-oriented management works



1. Router triggers an alarm, prompting management application to request performance data.

2. ORB attempts to locate the router object data in its repository. When it cannot, it sends a message to another ORB requesting help.

3. The second ORB locates the object data and sends it to the management application.

GRAPHIC BY SUSAN J. CHAMPENEY

Objects explained

So what is an object-oriented management system, anyway?

Basically, it allows users to define managed devices as objects that have particular characteristics and relationships. An object is modular software code that defines the attributes of a device or application. Objects with similar characteristics can be grouped together in the same object class.

Characteristics of the managed device include performance parameters, how often the device is polled, what thresholds are set, what events will trigger alarms and its relationship to other devices. When devices are added to the network and added to a particular object class, they automatically attain these characteristics.

The objects are stored in an object repository, which houses all of the information pertaining to managed objects or object classes. This information can be retrieved on behalf of management applications using an object request broker (ORB).

When a network device such as a router or a switch triggers an alarm, a management application can request data about that device. The ORB locates the router or switch object in the repository and retrieves it via a direct connection, or sends a message to another ORB to retrieve it from a different location.

The management platform can also use traditional methods of interaction, such as Simple Network Management Protocol or Common Management Information Protocol messages, to retrieve Management Information Base data from agent software on the router or switch.

BY JIM DUFFY

Back to Reality

Loyalty is great for corporations but a lousy payoff when you get the ax.

BY DAVID J. BUERGER

The recent "retirement" of former IBM stalwarts Ellen Hancock and Robert LaBant touched a deep nerve for everyone in the computer networking industry.

Forget that these executives' efforts contributed billions of dollars to IBM's revenue. Ignore the key role of networking in IBM's apparent resurgence and the relationship these executives had with buyers. And don't forget to overlook the lifetime loyalty these two gave to their employer. Apparently, a big reason for their departure was "bad chemistry" with their new boss.

If honchos like Hancock and LaBant can be "retired" on a moment's notice, so can the rest of us.

Cynics have long described loyalty as a one-way street. The last few years of downsizing and reorganizations proved them right. However, when bigwig icons get the ax — not for a bad job but because someone didn't like the way they scratched their noses — ya gotta wonder about corporate priorities.

I'm not defending Hancock and LaBant. Maybe they needed to go. IBM lost a big opportunity to own the router market when its executives allowed the Raleigh, N.C.-based front-end processor folks to sweep router research under the carpet.

IBM likewise could have dominated the LAN market by de-emphasizing mainframes earlier in the game. And Hancock's reluctance to dump OSI and focus on TCP/IP clearly did more harm than good in terms of helping users make LANs interoperate with legacy applications.

But these faux pas aside, Hancock and LaBant *did* build IBM's business. Their fate reinforces the lesson that, irrespective of your job title, how many hours you pour into your job or how much corporate success you generate, tomorrow you could be on the street.

If that is today's operative business model, networking CEOs had better check their premises if they assume that employees will blindly stay married to their jobs.

The old model shielded employees from the risk of ownership. They naturally received less of the financial reward. But at least they got some form of job security.

Employers still expect loyalty, but do they deserve it? Today, employees are often treated as though they carry *all* the financial risk, yet most still get a small share of financial reward. Something in that formula doesn't make sense, especially in a hot industry such as computer networking.

Perhaps the expectation of employee loyalty is naive. We saw what Hancock and LaBant got for their loyalty. IBM chief Lou Gerstner might earn the same reward if the company's financial recovery turns sour. These days, investors will dump stock like a rock if a public corporation does not *exceed* earnings expectations.

The total loss of loyalty bodes ill for everyone. Good products and services require someone to care about the quality of their production. If owners are not doing the producing, then someone — employees or contractors — must care.

The information age requires quality networking products and support. God help us if the quality disappears because loyalty fails to go both ways.

Behind Door No. 3...

Network managers might not have job security from an organizational perspective, but new technical challenges translate into an ongoing need for their skills.

Application partitioning is the next level of client/server application fun and games. Client/server used to mean splitting computing tasks off onto the server, while client PCs handled the user interface.

New wisdom dictates that the application's server code be shuffled among several computers. In theory, this allows developers to stick processing in the most efficient spot. Sounds simple and makes sense, but as usual, they forgot about the network.

High-volume transaction settings will result in a lot of interserver communications. Current development tools don't allow for intelligent setup and control of the partitioning process.

Two things can result: Programmers get to write a heavy dose of extra code to manipulate the partitioning, and slower networks can get bogged down from extra traffic — especially if it passes through multiple LAN segments.

Just think of this as the technical community's revenge on threats to cut staff.

Web on the range

Doing electronic commerce (that's E-commerce for you trendy types) on the World-Wide Web is so cool that nary a soul has offered cautionary tips. So allow me to be the bad guy.

Oracle Corp. and other companies are laying the right foundation for servers and applications. But have you ever *used* a Web server to order something?

I've logged on or tried to log on to dozens of Web home pages. Like typical consumers, I used a 14.4K bit/sec modem. The performance was awful. Half of the pages jam up when you try to scroll back and forth. Often, they don't work at all.

The Web will be functionally useless for E-commerce without ISDN links or fast LAN links to each user.

Any wonder that the Web's biggest proponents are telephone companies?

➾ Buerger is an Atlanta-based industry consultant and contributing editor to Network World. He can be reached at (404) 495-7494 or at dbuerger@pipeline.com.

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CyberSpeak

Voices from the reader network

What does Apple need to do better to integrate its systems into heterogeneous networks?

◆ "Apple needs to provide third-party developers of network applications with more information to let them write specific protocols for their net applications that allow easier implementation and maintenance with AppleTalk and TCP/IP."

Kevin Thomas, computer specialist, Palo Alto VA Medical Center, Palo Alto, Calif.

◆ "I look not just to Apple, but also to the third-party vendors. They just have to keep improving the cross-platform tools. Heterogeneous networks are the ones out there. Connectivity will keep the Macs in the corporation."

Ted Lindsey, microsystems specialist, Ligand Pharmaceuticals, Inc., San Diego

◆ "Macs need better net management tools and cleaner SNMP connectivity. Also, people want multiprotocol solutions. The products are not coming from Apple, but from third-party vendors."

Dorian Couglas, president, NetWork Frontiers, San Francisco

◆ "Often, vertical market software, like our property management system, is developed on specific systems, which precludes the Macintosh from being included. Most hotels definitely have a PC culture. What could bring in a Macintosh is more vertical market software being available for the Macintosh.

"The Mac's connectivity capabilities are sufficient."

Andreas Etelkozi, manager of technical support, Palo Alto Holiday Inn, Palo Alto, Calif.

NextWeek CyberSpeak Out!

Longtime IBM network products chief Ellen Hancock has resigned amid a management shake-up at Big Blue. How do you feel about her departure?

Responses due by 8 p.m. Thursday, Jan. 19. You'll get a T-shirt if we print your response. Please include your name, company and address.

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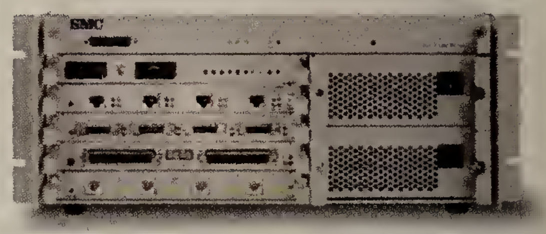

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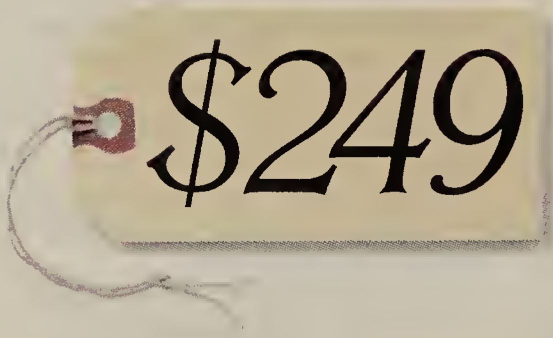

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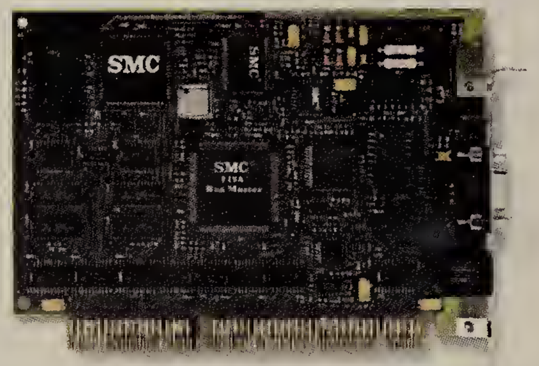

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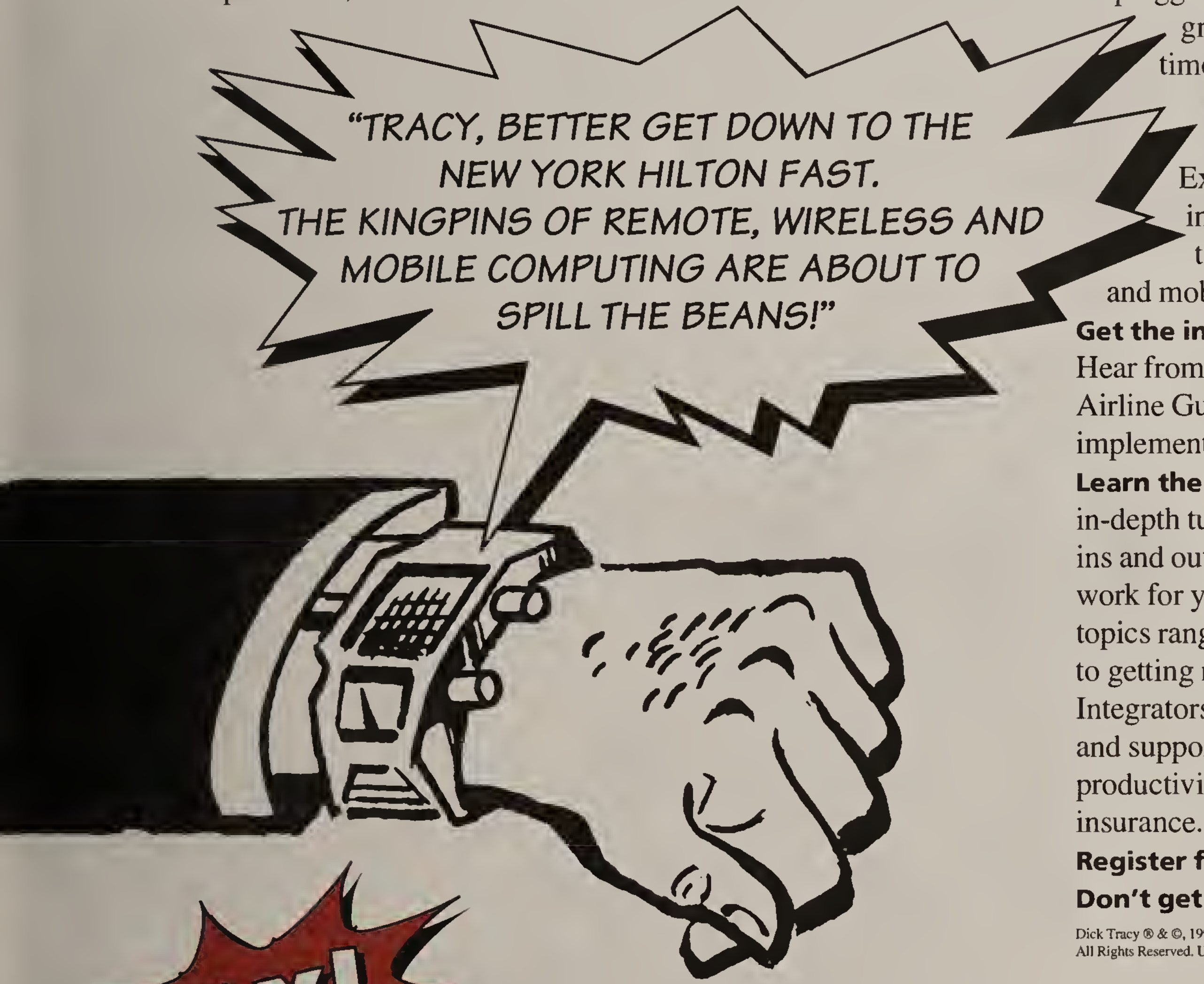
Don't Miss The Anywhere, Anytime Computing Conference and Exposition.

Do you want to learn how remote and wireless computing can help increase productivity? Or discover how to integrate new unplugged technologies with your existing ones? Or see the latest wireless and remote products and services firsthand?

Then hold onto your wrist radio. Because Network World Unplugged^{SM} is coming to the New York Hilton, April 11-13, 1995.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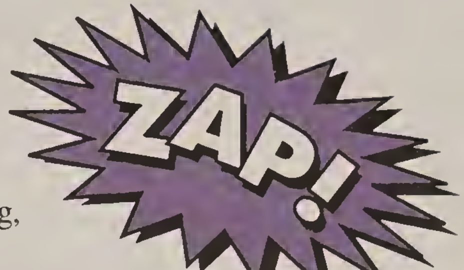

The focus is on solutions. This is the first and only show to focus on real-world solutions to the challenges of remote computing and wireless networking in healthcare, education, banking, finance, insurance, retail, manufacturing, sales and service, and more. At Network World Unplugged, you'll walk away with practical advice for providing growing legions of unplugged users with anywhere, anytime access to the corporate network.

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Learn the truth during our conference program. Attend our in-depth tutorials and conference sessions and discover the ins and outs of putting anywhere, anytime computing to work for you. The Application Solutions Track covers topics ranging from remote LAN and database access to getting mobile applications on the air. And the Integrators Forum features sample RFPs for deploying and supporting a mobile workforce and improving productivity in retail, distribution, finance and insurance. (See the inside back cover for details.)

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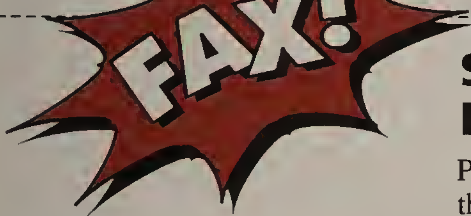

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13. Manufacturer (Computer/Comm)
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15. Distributor (Computer/Comm.)
16. Other

D. Job Function
17. CIO/VP MIS
18. IS Manager/Director
19. Networking Manager
20. Other IS/Network Staff
21. Non-IS Executive (CEO, CFO, VP)
22. Non-IS Director/Manager
23. Other

E. Number of Employees at Your Company
24. Over 5000
25. 1000-4999
26. 500-999
27. 100-499
28. Under 100

F. Number of Sites Purchasing Influence
29. 100+
30. 50-99
31. 20-49
32. 10-19
33. 2-9
34. 1
35. None

G. Role in Purchasing Process
36. Approve
37. Recommend/Specify
38. Determine the need
39. No role

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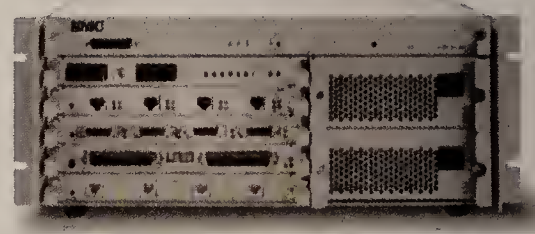

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CIOs, IS managers, network managers and technology managers will discover how unplugged technologies can increase productivity, improve customer service, boost return on investment, and create competitive advantage.

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Interested in Unplugged Computing? We've got you covered. The hottest topics in unplugged computing will be covered in-depth during Network World Unplugged's Conference Program. Get up to speed during our all-day Tutorial sessions. Then attend the Application Solutions Track, consisting of eight 90-minute sessions, or the Integrators Forum, two intensive full-day sessions featuring sample RFPs.

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Tutorial Sessions—Tuesday April 11, 9:00 AM—5:00 PM

"Fundamentals of Wireless Data Communications and Mobile Computing" Learn what unplugged communications and computing can and can't do for you. And find out about the hardware and software requirements for wireless data networking from in-building to global. INSTRUCTOR: Craig Mathias, Principal, Farpoint Group.

"Remote LAN Access— Concepts, Products and Solutions" Explore the problems and solutions to providing remote LAN access to your users, business partners and customers. Compare remote node to remote control programs and see how to provide access for one remote user or one hundred. INSTRUCTOR: Howard Marks, Chief Scientist, Networks Are Our Lives, Inc.

"Mobile Data and Messaging" Would you like to access messages and data while on the road? Then this session is for you. Expert panelists will analyze the three components necessary for mobile monitoring. INSTRUCTORS: Mark Lowenstein, Director; Roberta Wiggins, Director; and Samuel May, Analyst, Wireless/Mobile Communications, The Yankee Group.

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"PCS" PCS promises users a wide range of personal communications services. Examine PCS capabilities, technology, architecture and connections with existing networks, as well as regulatory and other issues. INSTRUCTOR: Peter Rysavy, Principal, Rysavy and Associates

"Totally Unplugged: An In-Depth Look at Wireless Technologies and Business Applications" Take a detailed look at wireless voice and data technology choices. How do they work? How are they likely to evolve over the next few years? Which companies are likely to come out on top? INSTRUCTOR: Ira Brodsky, President, Datacomm Research

Conference Sessions — Wednesday and Thursday, April 12-13, 10:00 AM—4:30 PM

TRACK ONE: Application Solutions

"Remote Database Access" CHAIRPERSON: Joanie Wexler, Senior Editor, *Network World* PANELISTS: William Niemi, Director of Client/Server Computing, Fidelity Investments; Ameet Patel, Manager of Advanced Technologies, BASF Corporation; Randy Heater, Product Marketing Manager, Sybase, Inc.

"Remote LAN Access" FEATURED SPEAKER: Howard Marks, Chief Scientist, Networks Are Our Lives, Inc.

"Remote Messaging" CHAIRPERSON: A.J. Petras, Project Manager, Boston Edison Company PANELISTS: Brian McCahery, CEO, US Equity Management Corporation; Ameet Patel, Manager of Advanced Technologies, BASF Corporation; Bill Frezza, President, Wireless Computing Associates

"Wireless Service Options" FEATURED SPEAKER: Ira Brodsky, President, Datacomm Research

"Supporting A Mobile Workforce" CHAIRPERSON: Iain Gillott, Manager of Wireless Research, LINK/IDC PANELIST: Michael Irwin, Vice President and CIO, G.O.D.

"Getting Mobile Applications On The Air" CHAIRPERSON: Craig Mathias, Principal, Farpoint Group PANELISTS: Sue Rudd, President, Acorn Communications; John Martino, President, Complex Architectures; David Oran, Technical Director, Mobile Software Division, Digital Equipment Corporation

"Emerging Technologies" FEATURED SPEAKER: Mark Lowenstein, Director, Wireless/Mobile Communications, The Yankee Group

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- Attend a dynamic User Keynote Presentation by Mel Trudeau, CIO, Official Airline Guides
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- Hear Corporate Reengineering Success Stories

TRACK TWO: Integrators Forum

Network World Unplugged's Integrators Forum includes two full-day sessions featuring sample RFPs for deploying and supporting a mobile workforce in the financial industry and improving productivity in retail and distribution. Each RFP will be presented by three system integrators who know the ins and outs of mobile computing and wireless communications.

Wednesday, April 12, 10:00 AM—4:30 PM

"Deploying and Supporting A Mobile Workforce"

Thursday, April 13, 10:00 AM—4:30PM

"Improving Productivity in Retail and Distribution"

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